THE CHEMIST AND DRUGGIST

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OUR COUNTRY AND COLONIAL SUBSCRIBERS are requested to furnish any trade gossip that they may consider interesting.

Subscribers are requested to observe that, for the future, the receipt of THE CHEMIST AND DRUGGIST in a *Green Wrapper* indicates that with that number the term of subscription has expired, and that no further numbers will be sent until the same has been renewed. We issue the notice very respectfully, not that we distrust our Subscribers, but simply because we find it impossible to keep an immense subscription list like that we now have, extending to almost every town in the world, in order without an exact system like this.

Editorial Notes.

PROFESSOR GAMGEE introduces to chemists a new antiseptic in the shape of a solution of the Chloride of Aluminium, which he decides to name, Chloralum. His article on another page describing his experiments will be read with much interest. The only objection to this title is that it strikes one at first as being nearly related to, if not identical with, the now popular sedative medicine Hydrate of Chloral. In some degree to obviate any mistake in this respect, we would suggest that from the first the new antiseptic should be pronounced with the accent on the second syllable, which would besides best convey a distinctive idea of its composition. We have a sample of the article before us, and next month will record the results of our experiments. Among the advertisements will be found particulars as to how it may be obtained, so that other chemists who wish to try it may do so.

SEPTEMBER 13, 1870.
Midnight.

The British Pharmaceutical Conference has inaugurated a most successful meeting at Liverpool this day. Many new friends are here, and Liverpool holds out the hand of fellowship, and shakes ours most heartily. We miss some of our most popular comrades, among whom we may mention Messrs. Brough, Deane, Hanbury, Hills, Morson, and Schacht. Those only who have attended former gatherings know how great is the gap, both in a scientific and social sense, which the absence of these gentlemen makes among us. That two of these were absent through ill-health is on every hand regretted. The dinner at the Adelphi Hotel this evening (Tuesday) was most successful. It was attended by about 100 gentlemen. The chief and most touching incident of the evening was the transmission of a telegraphic message to the American Pharmaceutical Association, holding its meeting at Baltimore simultaneously with our own. The following is a copy of the message:—

"From the President of the British Pharmaceutical Conference at Liverpool to the President of the American Pharmaceutical Association at Baltimore,—The most successful meeting ever held sends hearty fraternal greetings."

We still await the answer: goodwill and mutual sympathy run faster than the telegraph.

LIVERPOOL, September 14.

Telegram just received from Baltimore: "Fraternal greetings of the American Pharmaceutical Association."

THE sufferings of the wounded soldiers in the late fearful battles between France and Germany are sympathized with throughout Great Britain. When the fighting ceases, and the spoils are gathered, false glory flies from the battle-field, but duty, pity, and charity remain, and national animosities are almost obliterated by the broader and nobler principles of humanity. It is here that England may intervene, and show that, though she does not care now to fight for an idea, she cannot stand selfishly by while such disasters occur around her as those she witnesses. The Editor of the *Pharmaceutical Journal* appeals to the chemists and druggists of England to form a fund in their name for the relief of the sick and wounded. Many have handsomely responded to this appeal. We cannot do otherwise than urge it upon our readers, though we confess we would rather appeal for contributions to be paid to the National Society direct. In the presence of such a tremendous calamity, shoppiness is out of place, nor does it seem quite like the charity which "vaunteth not herself" to swell the fund in a trading way like this; nevertheless, the need is so urgent that we would ask, as far as our influence goes, for such aid as can be rendered, to be given quickly through either channel. The National Society's office is at 2, St. Martin's-place, Trafalgar-square; and Mr. Bremridge, 17, Bloomsbury-square, receives subscriptions for the Chemist and Druggists' Fund. Messrs. Piesse and Lubin, also, of 2, New Bond-street, have requested us to mention that they are glad to receive subscriptions for the "French wounded."

FOR some months past, our columns have contained the reports of some very practical papers read before the London Chemists' Association by different gentlemen, the whole forming a commentary on the British Pharmacopœia, compiled entirely by those conversant with its processes, and engaged, more or less actively, in dispensing its preparations, and thus conveying opinions and judgments which must carry considerable weight. The next session of this Association commences on October 4th, and we gladly take the opportunity which the recess affords to recommend many of our metropolitan readers who have not hitherto done so, to offer themselves for election, and thus assist in the most sensible practice of giving and taking pharmaceutical information, and forming friendships of a valuable character. The member's subscription is 1s. 6d. per quarter, and admission is only obtained by ballot; but we believe there is nothing like exclusiveness or cliqueism among the members or council, who have our best wishes for their continued success. The following particulars have been sent to us, which we publish with pleasure:—"The 'London Chemists' Association' was originally started in 1864, under the name of the 'Chemists Assistants' Association;' but in December, 1869, the name was changed to the present one, as many of the members had become principals themselves, and also because some employers looked upon it as a sort of trades' union affair amongst assistants, organized for their own especial interests. But such was not the case; for the only objects sought were, and are, the advancement of practical and scientific knowledge, and the promotion of a friendly feeling amongst its members. The papers read by the members at evening meetings and the discussions which have followed, have, year by year, shown a gradual progression, and many members have testified to the benefits in an educational point of view, that they have derived. The following are the officers for the ensuing session:—President, Mr. J. Sands; Vice-President, Mr. R. J. Jewell; Council, Messrs. Beedzler, Jessop, Peal, Taubman, and Weaver; Treasurer, Mr. W. M. Bell; Secretary, Mr. E. Beynon. The new programme is not yet completed; but the session will be opened with an address by the President. The following gentlemen have promised papers:—Messrs. Bletsoe, Bell, Beedzler, Beynon, Brownen, Jessop, Jewell, Peal, Sands, Taubman, and Weaver. Every member will shortly be supplied with invitation cards, which they will issue to any gentlemen desirous of paying a visit to one of the evening meetings. The Secretary will be pleased to receive the names of candidates for membership. The members of the association deeply regret their great loss by the sad death of Mr. Porter. At the last council meeting the President was requested to send a letter of condolence to his friends, expressive of the high esteem in which he was held.

Mr. Schacht, of Clifton, whose efforts on behalf of pharmaceutical education have, we hope, benefited other neighbourhoods besides his own, has published some important correspondence on this subject between himself and the Secretary of the (Government) Science and Art Department. From this it appears that the Lords of the Committee of Council on Education having considered the claims of pharmaceutical students as set forth by Mr. Schacht, "have been pleased to allow payments to be made on the result of the examination of pharmaceutical apprentices and assistants in science." It will thus be seen there is no longer any room for doubt upon the point that the machinery of the Science and Art Department of the Committee of Council on Education, with all its advantages, is open to be employed by the pharmacists of the whole country. It was this idea that constituted the basis of the recommendations contained in Mr. Schacht's paper, read at the last Pharmaceutical Conference, and which he and his friends have so happily carried into practice in the Bristol School of Pharmacy. Mr. Schacht's figures and recommendations will be in the memory of most chemists who are interested in the subject, but now that this decision has been given, it seems worth while to recall the leading points. The following detached sentences will be sufficient to show how great is the need and how excellent is the opportunity, with the Government decision before us, to establish science classes in every town. We give Mr. Schacht's own words:—"We are brought to this, that about 1,700 would-be students, spread all over the country, may be supposed to be constantly seeking for scientific instruction, and that *fair* opportunities are offered them in twenty-nine towns, and *half* opportunities in about eighty-eight more. . . . . I consider the universal establishment of local pharmaceutical associations, as nuclei of action, to be well-nigh indispensable; and I am of opinion that the more a perfectly unselfish object, such as the one I am advocating—systematic scientific teaching for the juniors—is kept resolutely to the front, and all dangerous and insidious topics, such as 'uniformity of prices,' 'good fellowship,' and the like, avoided, the better will be their chance of general success. . . . . Medical schools and science schools lie ready to the hand of our associations in many places. With regard to the former, they are perhaps too few in number to be of much general help; but the teaching in the *science schools* might be employed with the *greatest advantage* wherever they are found to exist. It must be remembered that the principles upon which Government aid is extended to the cause of education are 'help to those who help themselves,' and 'payment for results.' The teacher is rewarded by grants of money in proportion to the number of pupils he can pass through the ordeal of the annual Government examinations and the positions they can then take. His utmost personal interest in the work is thus secured; and the pupils are encouraged, in the first place, by the smallness of the fees the teacher is thus enabled to demand, and afterwards by rewards of prizes and honours. Our local associations will therefore be sure of the hearty co-operation of all the science teachers of their neighbourhood, who will naturally be glad to welcome the constant supplies of pupils which our ranks are likely to afford; and they will also enlist more of the confidence of the pupils, who will be sure to appreciate the advantages offered by a thoroughly well organized system of teaching. In those places where at present *both* our subjects are not taught, an effort might be made to show the authorities of the schools that a fair number of pupils are ready to attend. This might frequently be sufficient to cause the opening of the required class. Even in places where no science classes yet exist, our associations might still look in this direction for help. The Department is thoroughly liberal in its scheme, and imposes as few limitations as possible upon the bestowal of its aid. An individual who has the requisite knowledge can without much difficulty become a 'recognised teacher,' after which he may claim that his pupils be included in the annual examinations, and that he himself be 'paid for the results,' even as though he constituted a portion of an established science school. Ordinarily, before an individual can become a 'recognised teacher,' he must himself have taken a first or second class in the subject at one of the annual Government examinations. Exceptions, however, are made in the case of a candidate who has taken any University degree, or has obtained the associateship of the Royal School of Mines or the Royal College of Science, Ireland. Our associations, therefore, would only have to find such an individual, and induce him to procure the recognition of the Department, to at once enable themselves to arrange for moderate fees from their pupils, and thus indirectly to appropriate a Government grant. From these considerations, therefore, I earnestly recommend all pharmaceutical associations to direct their special attention to the Science and Art Department of the Committee of Council on Education."

We gave currency to a rumour last month that Mr. Betts had determined to carry his capsules and his grievances before the Lord Chancellor. If our readers will refer to our July number, wherein is recorded the judgment of the Vice-Chancellor on the bills which had been filed, they will judge with us how forlorn a hope such an enterprise must be. Nevertheless it is to be attempted, and we now wish to call attention to the circular of the now old-established Defence Committee, which, under Mr. W. T. Cooper's presidency, still resists the man who has deliberately chosen to make himself the enemy of every retail trader in the country. The Committee asks for a general subscription from the trade towards the expenses of the defence, a petition which they are well entitled to make. A large amount of money is wanted as a Guarantee Fund. A small proportion of it only will be spent if the defence is successful; but we hope that the hearty co-operation of the whole trade will be promptly given, so that the committee may be encouraged, and the burden may fall lightly on each—each member of the trade being in one sense equally interested. One more successful fight will probably settle Mr. Betts; and we hope the result will be a warning to other manufacturers who may forget that the law is a two-edged sword, and may endeavour to make a fortune by the institution of vexatious litigious proceedings.

In a recent note the *Pall Mall Gazette* remarks that "a good deal of nonsense is talked about the fearful consequences of opium-eating. In moderation opium is an excellent stimulant, and this is well known to the hundreds of literary and professional men who could hardly get through their labours without its help. The stereotyped, emaciated opium-eater is one of the *bogies* used by well-intentioned but ignorant people, and is, like the hopeless drunkard, the exceptional instance in a large class."

The more limited the circulation of such foolish and dangerous writing as this, the better. We have no reason to doubt that the *Pall Mall* itself employs opium-eaters on its staff. The drowsy influence is only too frequently perceptible. But to risk the danger of increasing such a fearfully baneful practice in this country as opium-eating, for the sake of indulging in a little flippant affectation, is a responsibility which most editors would shrink from. Every one of our readers could support our assertion that no habit so surely leaves its devastating mark on every feature as this, and what it gives to compensate for its cruel havoc, we have yet to learn.

THE BRITISH PHARMACEUTICAL CONFERENCE, LIVERPOOL.

Before this journal is in the reader's hands, the Conference will have nearly finished its annual celebration. This Association has increased by sure but not by slow degrees, and its meeting is of sufficient importance to mark off the pharmaceutical year. Official details are unnecessary. We need not state that its excellent president is Mr. Stoddart, that the local committee is a strong one, and that Liverpool, besides being a great manufacturing centre, and with shipping which forms one of the boasts of England, is celebrated for its hospitality. What these conferences do is to bring men together; to make *names* personally known. We do not despise its scientific bearings, nor ignore the incentive it offers to future exertion. It is impossible for intelligent pharmacists to meet together without mutual advantage, and in these days of competition he who absents himself from its gatherings is ignorant of his own interests. Still, the paramount gain of such assemblies may be traced then and afterwards in those wider sympathies, that deeper consideration, that bearing and forbearing, that esteem and appreciation, which immediate contact only can create.

One hearty shake of the hand is more eloquent than a ream of essays; while a quiet conversation face to face is the magic wand before which the year's accumulated misunderstandings vanish. We thought, as we stood on the pier which forms one of the refuges of unhappy France, and saw the pale, anxious, panic-stricken crew escaping to a foreign, but not inhospitable shore, how widely different was the effect on the mind of the most vivid passages in the journals, from that which one half-hours' revelation of the actual misery produced.

This is the secret of the British Pharmaceutical Conference—when all its papers have been admired and read, when the young aspirant has been welcomed, and the veteran received his accustomed meed of praise, there is beyond, a heritage of friendships which, being founded on respect, are never broken.

We congratulate the members on a prosperity that could scarcely have been anticipated. Let them stick to science as it bears on pharmacy, and to the discussion of those grand social questions, educational and otherwise, which concern the whole community, and with ever widening success they will maintain the high position which they have already won.

J. I.

CHLORALUM, A NEW ANTISEPTIC.

By John Gamgee, late Principal of the Albert Veterinary College, etc.*

To the readers of the Chemist and Druggist, any information on new compounds which are likely to come into general use must be acceptable, and I therefore make no apology for directing their attention to the hydrated chloride of aluminium. It is a salt which, as a preservative of organic compounds, I have made the subject of numerous experiments for some months past, and the more I work with it the more am I surprised that it has not been used in medicine. That, in common with other aluminous salts, it has the power of arresting decomposition, may not be altogether unknown; and what I claim as the result of my researches is, the recognition of its extraordinary value as an antiseptic—indeed, as a substitute for the very poisonous solutions of chloride of zinc—the caustic carbolic acid, which from its smell, cannot serve for many purposes; chloride of lime, which evolves the most unpleasant fumes when used in water-closets or elsewhere; the permanganates, which stain; and sulphurous acid, which cannot be conveniently used in hospitals or in the sick chamber.

Two obstacles have presented themselves to its prompt introduction into general use. The first is the source of supply, and the second the name.

Since the chloride of aluminium has never been a commercial article, and it was important to secure large quantities at a moderate price, half a ton was first made, to determine the best method of production. Supplies can now be ensured at a cost not exceeding that of the poisonous chloride of zinc, and below that of carbolic acid—indeed, so far below carbolic acid that it must supersede this where disinfectants are used in abundance—to water streets, closes, alleys, etc., which are now often redolent of the tar acid odour, that by no means finds favour in every household.

Secondly, as to the name. An antiseptic and disinfectant of such a character as this non-poisonous chloride, cannot be too commonly or too widely used. That a long scientific name is an objection in a commercial point of view, and attended with great inconvenience, everyone will admit. Carbolic acid is usually termed "carbonic" acid by the people, and every chemist is called upon daily to check popular blunders in naming articles asked for across the counter. I recently heard a respectable youth ask a dispensing clerk for "everoscing," and I was astonished to see a bottle of effervescing citrate of magnesia opened to supply the demand. I have consulted several medical friends and chemists as to the best popular name for the hydrated chloride of aluminium, and, after many fruitless efforts, have determined on calling it "chloralum." I am aware of the objections to be raised to this, but since I searched for a single word whereby to designate it, one that would, in some sense, indicate the nature of the compound, and at the same time be quite new, I have resolved to adhere to a name which, like *telegram*, may become popular in spite of classical objectors.

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* Communicated by the Author.

All this matter of business may seem irrelevant; but only those who have happened to introduce some novelty are aware of the insurmountable barriers which present themselves in commerce.

And now, referring to the more pleasant part of my revelations—the results of experiments—it is not unimportant to state that in January last I had to pay from 12s. to 24s. per pound for small quantities of the chloride to be found in the shops of manufacturing chemists in London. I did hear that the Messrs. Bell, of Newcastle, had supplied the anhydrous chloride to be mixed with size by Manchester cloth-dressers; but on application to this firm, I was told they had discontinued the manufacture of the metal, and, therefore, had none of the chloride. With the small quantities I could find, amounting in the whole to less than a couple of pounds, I made solutions of much greater strength than I have since found requisite, and immersed raw hide, meat, the feet of cattle cut off at the knee, rough fat, and other agents for various periods, varying from a few minutes to twenty-four hours. The result was absolute preservation, and what is more astonishing, after keeping these specimens up to the present time I find no insects attacking them as in the case of other means of preservation, even with arseniates.

Meat dipped in solutions of 1030 to 1040 specific gravity, had a strong astringent flavour; but a retriever dog did not object to make a daily meal off flesh thus preserved, and thrived well on it. I knew from previous work that this chloride was non-poisonous; but I repeated my experiments to satisfy myself on the point, and then commenced preserving fish. I tried large quantities of plaice, soles, cod, whiting, mackerel, haddocks, mullet, and other kinds. Some were bought when far from fresh, and a dip purified them and arrested decomposition. A flabby cod of suspicious appearance became firm, and was good eating after a day's immersion. We had the least success with the mackerel and mullet, and as a rule, none with the fish that had not been cleansed.

Mr. Frank Buckland aided me in procuring salmon from Thurso, Aberdeen, and Galway, dipped in the solution when caught, and sent up to London without ice. All the fish arrived in good order, and kept several days. A sea trout was dipped in the solution in Aberdeen, exposed to 80° for thirty hours, and then sent up in a box. Mr. Buckland and Mr. Brudenell Carter tasted the fish, and coincided in the judgment formed of it in my household. The trout was firm and of excellent flavour, and in both respects contrasted favourably with salmon that had been transported in ice. The result of these experiments was that the fish would bear immersion for five or six days. The scales softened, and the flavour was somewhat affected by longer immersions. Slices of fish were apt to discolour and lose their flavour in a much shorter time than whole fish; but a salmon split in two would dry slowly and prove good eating many days after being caught. As an aid in the drying of cod on the Newfoundland coast and elsewhere, a mild solution of the chloride would be invaluable, since thousands of tons of fish have to be thrown away, when caught in abundance, because they cannot be dried fast enough.

The chloride of aluminium is a deliquescent salt; but it has a tendency to part with its chlorine, and thus no obstacle is offered to the drying of the fish. These experiments show how safe an agent chloralum is, and every medical man can appreciate the importance of having an inoffensive agent to be used in the sinks, dust-holes, and accumulations of filth and garbage in and around kitchens. A raid on the dust-holes and dust-pans is, probably, next in importance to the disposal and disinfection of sewage, and physicians have never had an antiseptic at their disposal which could safely be used in the dirtiest corners of most dwellings.

For ordinary disinfecting purposes, solutions varying from 1006° to 1010° specific gravity are quite strong enough. Stronger solutions are usually unnecessary, and impart flavour to edible substances.

Anyone who wishes to try a convincing experiment as to the value of chloralum, should drop some in strong sewage-water. The solid matter is precipitated more rapidly than by the use of a persalt of iron, and the odour disappears. I am quite satisfied that it will aid those who are attempting to deal with the sewage of towns by combined mechanical and chemical means when irrigation is impracticable. It has one great virtue, which Dr. Budd, in a letter to myself, says must belong to "the antiseptic of the future," viz., that it is quite harmless to vegetation. The chlorine combines with ammonia and other bases, and alumina is deposited with the solid organic elements. In the dead-house, the dissecting-room, and museum-laboratory, chloralum will be found invaluable.

It is most important to increase the number of agents available for sanitary purposes. The destruction of animal poisons, so much neglected a few years since, marks an epoch in medical history which is in pleasant contrast to the days of long prescriptions and infallible cures. Cattle-plague times fortunately brought into fashion the stamping out of a malignant contagia, and for this purpose, a good antiseptic, which cannot do harm, offend the most delicate nose, nor soil the finest linen, is a great desideratum.

I have striven to show, for years past, that we have a very distinct and destructive group of diseases in animals—the epizootics proper—propagated through time and space by contagion. Wherever these epizootics appear, antiseptics are of great value to destroy the virus as it is thrown off by the sick animals. All excreta should be disinfected, and all agents which are at all likely to be contaminated by the breath or discharges.

In the contagious pleuro-pneumonia I noted, some years since, that mild cases are controlled, and even cured, by astringent preparations, such as the sesquichloride of iron, and in the earliest stages of exudation the internal use of chloralum would tend to limit the disease. It must be understood that I do not advocate treating cases of pleuro-pneumonia, except when special circumstances render it very desirable to do so. As a rule, the animals do best without medicine, but the early exudation occurs rapidly, much in the same way as hæmorrhage and the hæmostatic properties of the chlorides of iron and aluminium render good service.

In the foot and mouth disease, which should never be permitted to reach our farms, a chloralum solution checks the discharge, destroys the virus, favours the cicatrization of ulcers, and may be regarded as the best remedy to be used.

In conclusion, I wish to direct the attention of surgeons to the use of the hydrated chloride of aluminium in the treatment of wounds, erysipelas, gangrene, and various contagious inflammatory diseases of the superficial parts, such as the contagious ophthalmia of children, soldiers, etc. In fever wards, and every sick chamber, gargles and lotions containing it will frequently be found of use, and linen can be dipped in solutions of it before removal from the sick chamber. It is a powerful styptic, and in the treatment of chronic and acute discharges, hæmorrhage, etc., it is of great value. It is sufficient to have drawn attention to this subject, to ensure the multiplication of experiments; and the more the new compound is tried, the better will it be appreciated.

OPIUM SMOKING IN BLUEGATE FIELDS.

THAT which probably distinguishes London from every other city in the world, is the utter absence of any special character. All large sea-ports are necessarily cosmopolitan, and in this respect resemble London to some degree, but in most cases, as in Liverpool, for example, the ships, the docks, the river, are ever foremost in our thoughts as we picture the town to our minds. It is easy too, to indicate at once the nucleus, so to speak, of the influence of most other large towns. Manchester calls up ideas of magnificent warehouses and important factories, and its old Roman name, so inappropriate now, seems fitly translated by its modern title, Cottonopolis. Great gun manufactories and gun-barrel proving establishments introduce the railway traveller to Birmingham, and he never gets out of the sound or remembrance of firearms while he stays. Paris can be described only by its own adjective *Parisien*. This includes much, but still it conveys a compact idea, more easily understood than conveyed in words. The events of the last few weeks show us, in one aspect, the length and limit of this word's meaning. The pageant of war, its pomp, pride, circumstance, and all its glittering surroundings, are essentially *Parisien*, and accord most harmoniously with the fair city and her delights; but the grating horror with which all Europe has thought of the possibility of Paris herself becoming a battle-field, is a proof that though *Parisien* may mean warlike, it does not mean war. Wooden legs and repulsive wounds would be out of place in Paris, though it may be that the Nemesis of nations has ordained such bitter experience of suffering for her, to follow her reckless gaiety, as has not fallen to the lot of any other capital in modern times. New York, again, in some senses is, perhaps, even more cosmopolitan than London, but even cosmopolitanism there is deeply tinged with Yankeeism. New York is essentially an American city; there is no doubt about that; London, on the contrary, would be very imperfectly described if we simply called it an English city. The observant wanderer through its streets finds its features change like the scenes in a kaleidoscope as he moves from quarter to quarter. French-row, Spanish-row, Italian-row are here and there; indeed, little Continental cities are almost to be found within the metropolitan area; the day is not far distant when Germany may give up asking the interminable question as to where is its Fatherland, and decide for London. Ireland is here, and loves to crowd in our dirtiest slums; and if by chance an interstice does occur anywhere, a Jew or a Scotchman instantly fills it. A fashionable suburb in the West is now known as Asia Minor, from the favour it has won in the eyes of the English nabobs who have returned from the East; but Asia Minor *vera* is in the neighbourhood of the docks. Every ruler in the world, not utterly savage, has some subjects in London, and the remarkable thing about it is that in so small a degree, as a rule, is the individuality or the nationality of these immigrants affected by residence here. Some say London is a home for no one; surely no city is such a home for all. If ever a word had an extended meaning, *home* has in London. Much more is known of the worst of these homes now, than was known twenty years ago; but acres of houses still remain a *terra incognita*. We have lately lost the writer who, more than any other man, had patiently explored and truthfully described the every-day life of the almost unknown barbarians living next door to us. Mr. Dickens loved London, and sought out her secrets as only a loving student could. How much he, one man among three millions, has done to ameliorate the condition of perhaps the two-thirds of that vast number, who sadly needed such amelioration, can never be measured, but let not England pay such a poor tribute to his memory as to think that his only, or, indeed, his chief aim in these explorations was to seek out scenes for his pen to describe, that he might, with smiles or tears, relieve the *ennui* of the fashionable world. He aroused and kept alive an earnest human sympathy with suffering, which has blessed and will bless many thousands who, perhaps, never heard his name; and this was his first and noble object.

The fragment of his last work, so sadly left incomplete, and yet finished with so much care as though he knew it was to be his last, contains remarkable evidence of his untiring scrutiny. The description of the opium-smoking den in the first and last parts of the "Mystery of Edwin Drood," has aroused such general interest that I have ventured to write out my notes of a visit to the very same chamber (as I have every reason to believe) wherein are enacted the gloomily picturesque scenes related in those pages. I had mentioned my desire to a most trustworthy friend, who entered heartily and joyously into the spirit of the expedition. We agreed to meet on the flags in front of the Royal Exchange at 8 p.m., on the 6th of September, under any weather-circumstances which might be pleased to present themselves. My preparations for the journey were simple enough, being merely to remove every article of jewellery (a light enough task), and divesting myself of collar and neck-tie, replace these with a large check worsted comforter. I covered myself with a shabby coat and a billycock hat, and armed with a stick and a good conscience only, set off for the rendezvous. When, in a thick bundle which I at first took to be a rather disreputable Portuguese sailor, I recognised my comrade, I indulged in a roar of laughter which should have aroused the Lord Mayor opposite. We soon got accustomed to each other's appearance, however, and a few minutes after, reclining on the divans of the Café Royal, Aldgate, we prepared our stomachs for the narcotic which, we hoped, would follow, by drinking some good strong coffee. We had not the slightest notion where we should find the opium dens, but Ratcliffe Highway suggested itself as a promising quarter. Weighing anchor, therefore (I must be allowed to indulge in a few seafaring metaphors, considering the company I went among), we drifted on down the Minories, past the Tower, by the Mint, under the shadow of the great dock walls, until we emerged among the gay and festive crowds who thronged the pavements of the lively boulevard to which I have referred. We were still too early, as we thought, to go to business, so we sauntered on until we came again to gloomy, narrow, quiet thoroughfares, relieved only here and there by the light of a dingy tavern. Into one of these we entered and had some bitter ale, while we made a few enquiries of the kind-hearted little landlady who served us. She evidently took us for foreigners, and in her goodness of heart, talked slightly broken English to us, apparently thinking that would be more comprehensible. We told her that we wanted to find a place where opium was smoked, and this revelation won her pity for us, if not her respect. But though she tried hard to discover for us from some old cronies in the parlour, the whereabouts of such places, which all had heard of, it was without success, and we left her with thanks for her friendly parting warnings of the dangers of Ratcliffe Highway. Retracing our steps, we now began in earnest to seek out the haven where we would be. Our plan was to ask every policeman we met. Some had heard that there were such places, some knew nothing of them, but all, without exception, replied to our questions with the utmost civility. At last we met two officers, who gave us definite information that there were such dens in Victoria-street. The name hardly seemed to promise well for the locality, but our informant immediately added, parenthetically, the awe-inspiring words, explanatory of the former title by which he had dignified the street, *Bluegate Fields.*

The name of our sovereign is now fixed against the entrance to this dismal street, but the district is faithful to its old love, and knows it by no other name than *Bluegate Fields.* Thither then we went, and persuading an officer to accompany us through the street and point out the opium house, we were shown, nearly at the top, a narrow, dark little court, with about half-a-dozen houses in it, and blocked up at the end by a dead wall. This spot is known to the police as "Chinaman Court." Here dwell those serene, but sad-looking mortals dressed in turbans, frocks, and loose trousers, who sell perfumed woods about the City and West-end. At the top of the "Fields" our guide left us for a little time, promising on his return to introduce us to an officer who knew the district better. Alone in a rather turbulent neighbourhood, we turned into a small chemist's shop, hoping to extract some preliminary information respecting the company we were likely to meet. We speculated in an ounce of cough lozenges, but this order had no mollifying influence on the proprietor, who was evidently a man with a grievance against the world in general, which he ungenerously turned against us in particular, when we divulged the object of our visit. He knew nothing of such places, he said, although, as we afterwards learned, there were three within a stone's throw of his shop. He gave us the serious, though rather unintelligible warning, that if we went among the opium-smokers, they would "opium smoke" us; and then, apparently caring very little whether they did or not, he abruptly left us, cutting off all chance of further conversation. Our excellent blue-coated friend now returned, and introduced us to two other equally polite and intelligent officers, who escorted us down Bluegate Fields to "Chinaman Court" again, where they found a lady named Joe, with whom they conferred for a few minutes. Joe seems a popular character in the "Fields," and her activity, good humour, and readiness to oblige us, quite won our hearts. She was wiping her mouth outside a public-house when we met her, and she seemed on good terms with all the population. Opening a dark door in the dingy, paved court, she led us into a passage which was pure pitch darkness; then, calling for "Johnson" to "show a light for two gents," she pointed out the staircase and left us. Johnson turned out to be a Chinaman and the landlord of this opium restaurant. All the policemen had told us that we should find Lascars as the chief frequenters of these dens, and Lascars have always been associated in my mind with very sharp knives. The stairs were so steep that we had almost to hold our heads back as we ascended them, and with a rather vivid anticipation of savages, steel, and blood, they—our heads—emerged very carefully from the hole in the floor which admitted visitors. Two men, a Chinese and a Malay, were lying on a large broad bed, or rather mattress, which, raised about a yard from the floor, occupied nearly half the room. A candle stood between them on the bed, and both were smoking opium. A Lascar was also present, but I did not see him at first. My companion, following me into the room, made a good impression on our new acquaintances by giving each of them as hearty a shake of the hand, as though they had been his long-lost brothers. We soon felt quite at home, and asked a good many questions, which were answered very politely, though in broken English.

They told us that we were too late for the company (it was then about eleven o'clock). They said there had been seven or eight there that evening, but that from seven to nine o'clock was always the fullest time. Johnson—or Osee, which he said was his original Chinese name—says he has been established in this line of business "more long" than any other in London. He only knew of two other similar firms, both being close by. He is married to an Englishwoman, but Mrs. Osee always goes out at night to visit her friends. He appeared perfectly satisfied with this arrangement; indeed, nothing seems to disturb his equanimity, nor to change the placid smile which constantly illuminates his features. His customers spend sums varying from sixpence to eighteenpence per night with him. At my request he showed us how the opium is prepared for smoking, but I was not able to comprehend from his description enough of the process to enable me to describe it again. They buy it in the lump, and place this on a piece of matting. A fire, a saucepan, a basin, and some water, are then brought into the service, and the final result is that the opium is turned out a beautiful soft black extract not much thicker than treacle. The pipes have a stem about fifteen inches long, much resembling cherry-wood, probably made of that material, and are as thick as a large-sized ruler. They do not taper at either end, so that a fairly big mouth is an essential to all who would indulge in the practice. The bowl in the best pipes is fixed about three inches from the end of the stem, and is removable. It is quite closed up, except a little touch-hole, over which the opium is smeared, after a little piece, much smaller than a pea, has been roasted to a turn in the flame of a candle, being held meantime, and twisted round on the end of a long thick needle. It is necessary that this touch-hole must be constantly presented to the flame while the smoking proceeds, but the preparation and lighting seem to make an almost endless occupation. They were very desirous to see us smoke, and I therefore laid myself on the bed with my head resting on the Malay's shoulder, and took at least a dozen good pulls from the pipe. Except a slight exhilaration, I felt no effect from the smoking, but my friend, who took but three or four draws after me, began to get giddy through it. The men told us there would be more there the next night, and we therefore promised to revisit them then earlier. Leaving Osee and his friends, we stepped again into the court, and were hailed from the opposite side by a woman who asked if we should like to see her smoke opium. We accepted the invitation, and found her alone. She was evidently poorer, and doing less business than her thriving neighbour, but she seemed much more intelligent. I think she said that she was the only female opium smoker in London, and certainly Osee said that none of his customers were women. She never eats opium; she said she dare not do so, as she is told that wherever it lodges in the body it eats holes.

On one point I made very thorough inquiries. I have always been sceptical about the grand visions which have been so vividly described as the result of opium intoxication. I do not doubt that De Quincy and Coleridge dreamt marvellous dreams and saw magnificent visions when they were under its influence. These were men of great genius, and the opium which they took did but at the most develop their ideas. It certainly did not create them; they were there before; but it could not altogether hide them, and, therefore, a shadowy sort of cloud-land was produced, very grand, beautiful, and picturesque, but not the less, more obscure than it might have been if their intellects had not become partially enslaved. But that opium will inspire ordinary minds with these glowing thoughts seems to me utterly absurd, and opposed to all true metaphysics. It will make a stupid man stupider, just as it makes a clever man less clever. My friend Osee looked up with his beaming smile a little more expanded when I asked him if he ever dreamed during his opium intoxications, and he and the other men decidedly denied that they were ever guilty of such conduct. The woman was clearer still on this point. I asked her if she ever felt happy, dreamy, pleasurable emotions after smoking opium, and she shook her head very sadly. She said it was not that it produced pleasure, but merely that it relieved pain; to be without it was a state the horrors of which she described as "twenty degrees worse than *delirium tremens.*" She could not afford to smoke it constantly, and therefore she had to fill up the intervals, which indeed formed the chief part of the day, by smoking cigarettes of tobacco. Our friends over the way also smoked cigarettes whenever they dropped the more charming narcotic. But nothing can ever completely take the place of opium when the habit is once confirmed. De Quincy, who was an eater, and, I think, not a smoker of it—a far more pernicious habit by the way, if one may judge from the physiognomies presented by persons of the same age who have practised either—says in his wonderful confessions: "I have struggled against this fascinating enthralment with a religious zeal, and have at length accomplished what I never yet heard attributed to any other man; have untwisted almost to its final links the accursed chain which fettered me." I am quite certain that none of my friends in Bluegate Fields are capable of such gigantic efforts as those described by De Quincey in his chapter on "Unwinding the Accursed Chain." [*] To return to my lady friend, however, I have already intimated that she seemed poorer than her competitors across the court. Her room was a terribly poverty-stricken hole, and her story, which I confess I believe, was a very sad one. She told it to me, not officiously, but in reply to questions which I put to her. She was born and brought up, she said, in Orchard-street, Portman-square; had married an Indian and from him had learned the Hindustani language and the practice of the luxury which had cost her so much. He left her, and she falling through the various stages of sin, was now, at only forty years of age, left, in so complete a sense as the words do not often express, hopeless and helpless in the world. Her knowledge of the Hindustani language is probably her only means of keeping together the wretched connection which she possesses.

As I hinted before, I have not the smallest doubt that her room is the veritable spot where the opening, and almost the closing scenes of "Edwin Drood" are described as occurring. And a curious fact supports this belief almost to demonstration. There is not only the narrow court with but one passage leading to it, and the Chinaman's room on the opposite side, both of which facts are referred to in the tale; but when she showed us her pipe, she explained that the bowl had been made out of a broken ink-bottle, the stem being fixed in its mouth, and a little hole drilled through the side. Mr. Dickens alludes to this very circumstance, and seems to intimate that it is the usual manner in which the pipes are made, and not, as I understood it, an accidental invention of poverty. I did not think of it while with her, but at the other place I asked if any of them remembered a visit from a gentleman, whose appearance I described, corresponding with that of the novelist. They all eagerly answered in the affirmative; but my hope of obtaining a personal reminiscence was soon dashed when, in answer to one more question, they said it was about "two weeks ago" that he came. The woman, being more intelligent, would have been more likely to have remembered his visit. Our modest gift on parting called forth such a shower of blessings from her, extending throughout eternity, as I never heard before, even from an Irishwoman; and it was bestowed without the slightest trace of Hibernian accent. We went again the next night earlier, and again sought and obtained the guidance of "Joe." We saw the woman again, but did not revisit her apartment. She seemed much more lively than on the previous night, a result, I presume, of her unusual wealth. There were but four in Osee's room on this occasion, which somewhat disappointed us, as we had anticipated meeting a houseful. The extra one was another Chinese. I shall not weary my readers with a repetition of the almost similar events which occurred on this second evening. Our friends probably thought that they had secured two new and rather promising customers, and they were much more energetic in their demonstrations of affection. We both took another short pull at the pipe, but my companion seemed much the worse for it, imagining the room to be all trembling; and now, forty hours afterwards, he informs me that he still feels the influence of his dissipation. I took seven whiffs (I counted them this time, because I had determined to draw until the first trace of unpleasant symptoms showed themselves), and these gave me a slight feeling of confusion. When we parted, as we did, with many protestations of the most fervent friendship, the Malay confided to me that of the two I was his favourite, his reason for the preference being a short dirty pipe which I had purposely brought with me to smoke; while my friend, a non-smoker, had declined his offer of some cigarettes. I had declined also, but my reason was evidently tangible, and worthy of respect, it being that I preferred my tobacco stronger, as I got it in the pipe.

Two memoranda which I made I find I have omitted to place in my narrative. One is to mention the existence of a poor dirty little canary in a cage, which hung in Oseo's room, the sight of which led me to ask the landlord for a Chinese song; but he was much too lazy to "oblige the company." The other note is to remark on the curious manner in which the woman took her smoke. She would take from four to six long inspirations, and then resting for a few moments, would gradually and slowly emit the collected smoke from her mouth and nostrils. I may also add that she herself is certainly not the original of the character introduced by Dickens as the landlady of that apartment.

Half-way through Bluegate Fields stands a little chapel and school-house, the latter being open on week-nights. It stands back from the narrow street somewhat, and has on its façade the inscription, *Rehoboth Chapel.* I know not to what denomination it belongs, nor who support it; but I record, as the last impression of our expedition, a feeling of the sincerest respect for the men, and for aught I know women too, who, in the midst of such apparently hopeless surroundings of sin and sorrow, and with no excitement to maintain their courage, can continue patiently and lovingly labouring, in very deed, fulfilling the royal law of charity, helping those who could never help themselves.

In more senses than one, *Rehoboth Chapel* is an anchor of hope amid the dreary ocean of guilt which surges so abundantly around it.

A. C. W.

INTERNATIONAL EXHIBITION OF 1871.—We are requested by her Majesty's Commissioners to state, that there is no foundation for the rumour that the International Exhibition appointed for 1871 is to be postponed by reason of the war. The first of the series of Annual International Exhibitions of Selected Works of Fine and Industrial Art and Scientific Inventions will take place next year, as already announced.

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[*] In passing, I may mention (for I dare not quote from that fascinating book in this place on account of considerations of space) that the "Confessions of an Opium-Eater" have been published by Routledges in their World-Wide Library for 6d., a cheap treat indeed.

MEDICAL GLEANINGS.

WITH the beginning of October, our Medical Schools will set to work in earnest, commencing their new sessions. These sessions are opened at most of them with an introductory lecture by some eminent physician or surgeon, which is nearly always well worth perusal. If other matters are not too pressing, your readers will find abstracts of the lectures in the daily papers during the first week in October. At Charing Cross, Mr. Hancock, V.P.R.C.S., will be the lecturer; Mr. Brodhurst at St. George's; Mr. C. Bader at Guy's; Mr. John Wood at King's College; Dr. H. G. Sutton at the London Hospital; Mr. Gascoyen at St. Mary's; Dr. Cayley at the Middlesex; Dr. Jervis at St. Thomas's; and Dr. Sturges at the Westminster. Mr. Berry is to open the session at Queen's College, Birmingham; Mr. E. Atkinson, the Leeds School of Medicine; Dr. J. C. Brown at Liverpool; Mr. L. H. Grindon at Manchester; Dr. Nesham at Newcastle; and the Rev. J. L. Short at Sheffield. At St. Bartholomew's, the Introductory Lecture was discontinued last year, and will not be resumed. Possibly there are some chemists who think of bringing up their sons to the medical profession; if so, they will find useful particulars to guide them in either of the medical papers of last week (September 10th). I am inclined to think that the *Medical Times and Gazette* has this year given the best summary of the educational requirements of the Medical Council, and of the means necessary to secure these. The course laid out for aspirants to medical honours is very briefly this:—In the first place, a preliminary examination or the certificate of one of a great number of examining bodies which are named is required. After this, a certain course of study is demanded, varying somewhat in length and character, according to the degree aimed at, and the licensing body whose diploma is intended to be sought. At present there exist in the United Kingdom nineteen of these licensing bodies, the diplomas from each of which, although the value of one and the other is variously estimated, carry equal legal weight. The chief intention of the Medical Act Amendment Bill, which, though it failed last Session, is likely to be passed next year, was to cause an assimilation of all these, so that one curriculum and one portal might be the path for all future medical practitioners. During the past Session Sir John Gray obtained some returns relative to the granting of degrees, diplomas, licences, and certificates by these various bodies, statistics being given for the last five years—namely, from 1865 to 1869 inclusive. Some interesting particulars are disclosed in these returns, which have recently been made public. Taking the last year (1869) only, we find that the College of Physicians gave 69 licences (fee 15 guineas); the College of Surgeons to 257. This was a falling off of 107 from the previous year. The fee here is 20 guineas. The Society of Apothecaries 275 (fee 6 guineas); Edinburgh College of Physicians 240. Nearly half of these were double qualifications, given in conjuction with the Edinburgh College of Surgeons or the Glasgow Faculty. The fee for the combination is £16—that is, £5 less than the College of Surgeons' diploma alone in London. Passing by the single qualifications granted by the two bodies we have just named, we come to the University of Dublin, which gave 2 licences in medicine and 1 in surgery (fee for either 25 guineas); the King and Queen's College of Physicians granted 96 (fee, 15 guineas); the College of Surgeons in Ireland 99 (fee, 25 guineas); the Apothecaries' Hall in Ireland gave 20 licences for the modest sum of 10s. each, thus adding a ten-pound note to its funds. The University of Durham seems to have done no business. The particulars of the M.B. and M.D. degrees are given also. Of the first, Cambridge supplied 3; London, 17; Oxford, which gives M.B. only, 2; Aberdeen, 7; Edinburgh, 5; Glasgow, 38; Dublin, 41. Besides, Aberdeen gave the double degree of M.B. and C.M. (Mastery in Surgery) to 23; Edinburgh gave a similar combination to 39. The M.D. degree was taken 4 times at Cambridge, 10 times at London, 7 times at Aberdeen, 25 times at Edinburgh, 9 times at Glasgow, 10 times at St. Andrew's, 4 times at Dublin, and 51 times at the Queen's University in Ireland. The price seems to make a difference in the demand for this diploma, as we find that the Queen's University only asks £5 for it, while Dublin University refuses to let it go for less than £101 4s.; Cambridge demands £31 13s., London £22, Aberdeen 20, and St. Andrew's 50 guineas. Edinburgh and Glasgow, under the new regulations, obtain £31 and £15 8s. respectively. The returns give other particulars which there will not be space here to allude to. *Apropos* of this subject, we find a correspondent of the *Lancet* complaining that the questions in chemistry at a recent preliminary general examination of the Royal College of Surgeons were too severe, considering that this examination is only intended to test the candidate in the elementary facts of the science. The following are the questions referred to, which I am inclined to think are a little stiff for a comparative novice to answer off-hand, although I expect your students under Mr. Moss would make very short work of them:—

1. Supposing black oxide of copper to lose 100 grains of its original weight when gently heated in a current of pure hydrogen, what will be the quantity of water produced, and how may it be collected and weighed?

2. What happens when chlorine gas is passed into a solution of cold dilute potash, and into a solution of stronger potash at a boiling heat?

3. By means of a vacuous flask, purified atmospheric air is drawn slowly over metallic copper heated to redness. Supposing the copper to acquire 50 grains in weight, what will be the weight of nitrogen drawn into and retained in the flask?

4. A mixture of charcoal and chalk is strongly heated in a gun-barrel. What gas is thereby produced, and what are its properties?

5. What happens when nitrate of ammonia and phosphate of ammonia respectively are subjected to heat?

6. By what common gases or vapours is a piece of starch-paper, moistened with iodide of potassium solution, rendered blue? By what common gases or vapours is the blue colour so produced, discharged?

The city of Dublin has triumphantly returned to Parliament its chief physician, Sir Dominic Corrigan. The titled physician seems very popular among the profession. He has been five times in succession elected President of the Royal College of Physicians in Ireland, an honour never before conferred on any of its Fellows. He also seems to enjoy a lucrative practice, which he must, at least to some extent, surrender. He has been twice before defeated in his attempts to represent the city, and it may therefore be fairly calculated that he possesses some of the qualities requisite in a good legislator, zeal and pluck at any rate being conspicuous. He is a Roman Catholic in religion, and a thorough Radical in politics. This gain to the profession in the Senate is balanced by the loss of Mr. Clement, the late M.P. for Shrewsbury.

Among the incidents of the late meeting of the British Medical Association at Newcastle-on-Tyne, was the secession from that body of Drs. Paget, Stokes, Acland, Rumsey, and Embleton, in consequence of the defeat of the Medical Act Amendment Bill, of which they had been active promoters, and which was overthrown, as they considered, in part at least, by the action of the Association. Another incident was a breakfast given to the doctors by Mr. S. Bowly, the President of the National Temperance League. The speeches on this occasion were not, on the whole, very encouraging to the teetotalers. In fact, a good deal of discussion and investigation respecting the value of alcohol is just now proceeding among many eminent physicians, the result of which seems likely to be, on the whole, favourable to its employment—in moderation, of course.

A German poet, Herr Freiligrath, has published some verses addressed to his son, who has joined the Prussian army as a surgeon. There are some passages in them complimentary to the medical profession, and the *Lancet* ha therefore, gone into ecstasies over them. The original lines I have not seen, but the translation in the *Standard* hardly justifies the *Lancet's* warm criticism, describing them as "a beautiful lyric, picturesque stanzas, simple, impressive, and a delicate little chaplet of poetry." Here are the first and last verses:—

"Well wouldst thou in the contest
Strike home for Fatherland;
The Frenchman's ranks thou frontest—
Yet not with sword in hand.

"And if we e'er behold thee,
In Deutschland's conquering van,
In fond embrace we'll fold thee,
A boy no more—a man!"

The *Australian Medical Gazette* mentions a curious defect which has been found in a new Lunacy Act of that colony. In defining the scale of fees to be paid to medical men for examining lunatics, the clause is so worded that payment can be ordered only in the case of those examinations where the person examined is stated to be insane. If the examination results in a certificate of sanity, the fee is not payable.

The collector of customs at San Francisco, having received a box from China, marked "Drugs," upon opening it found it filled with dried snakes, centipedes, flies, and every conceivable form of bugs. Not knowing what tariff to impose upon these commodities, he forwarded the box to Secretary Bontwell requesting instructions. The secretary, it appears, was horrified at these specimens of Pharmacopœia, and doubted the propriety of classifying them as medical agents. The collector of customs at San Francisco and the secretary, we apprehend, are not very well versed in the medical business, as these articles are by no means anomalies in the Materia Medica. Lachesis, or rattle-snake juice, bed bugs, lice, crocodile dung, Spanish flies, and many other remedies of this class are among the most efficient and common in use among our homœopathic friends; while cochineal (a little insect), cantharides or Spanish flies, and until recently many other insects and animals constituted a portion of the regular Pharmacopœia.

In a not very old Edinburgh Dispensatory we find the following :— Take six young puppies before their eyes are opened, put them alive into hot lard, stew them for three hours, strain, to form an ointment. Good for rheumatism, sores, bruises, etc. Many other formulæ of an equally disgusting nature might be given, which would only prove that the Chinese are but a little behind their more intelligent brethren in the profession, in the use of remedies for the cure of disease; and we can see no reason why the Chinaman has not as good a right to import his snakes, as the homœopaths. Although they may not be prepared in quite as genteel a manner as those of the highly cultivated homœopathic pharmaceutist, we can see no reason why they should not cure a Chinaman just as well. The truth is, all of these disgusting preparations are the relics of superstition and ignorance, and as such will soon be expunged from the Materia Medica.

THE PATENT MEDICINE BUSINESS IN AMERICA.

THE profit of patent medicines is illustrated by some statements made in a recent report upon the manufacturing resources of Buffalo. It first mentions the success of Mr. Leveridge, the inventor of the "Wahoo Bitters." Another instance is that of a Mr. Swain, a poor Philadelphia bookbinder. He had a kind of sore on his leg which troubled him very much. One day, as he was running over the pages of a book he was binding, his eye came across a recipe for making a syrup which, it was said, would cure scrofula, king's evil, and other diseases of the blood. He copied it, got some of the materials at a drug shop, took the medicines, and in time was cured. He then made some for his friends and acquaintances, and finally left the binder's counter and entered upon the manufacture of "Swain's Panacea." It began to sell, and finally its fame spread wherever civilization had gone, and in some parts where people do not enjoy that blessing to this day. He paid enormously for advertising, and after many years he built blocks of stores and splendid mansions in Philadelphia, where they appear in all their magnificent proportions, the pride of the city and a monument to the memory of a patent-medicine man. He died and left his heirs a million or more.

It may be thirty-five years ago that Dr. Benjamin Brandreth made his *debût* in New York as a vendor of pills. It was alleged at the time that he procured his recipe from an old man who either came over with him in the ship from England or with whom he became acquainted in New York. It makes no matter which. When he first started in Hudson-street he was too poor to advertise, and for some time sold his pills by the single box until he acquired a sufficient sum to put a short advertisement in the *Sun*. As the pills began to sell he increased the manufacture, and established agencies, in all cases leaving them with booksellers, never allowing druggists to sell them as his agents. After a while he found the druggists were selling more than he was manufacturing. An investigation showed that they were an imitation article. This gave him a good chance to caution the public against counterfeits. In time he opened a central office in Broadway, above Warren-street, which, for a long time, remained his principal office. At length he made terms with the druggists, and the pills became a regular article on the price list of wholesale houses. Afterwards a site was purchased at Yonkers, where a factory was built which supplied the demand. A sloop carried a load of hogsheads of pill boxes up, and brought a load of pills in boxes back. The doctor, probably, owns a steamboat to do his business now, we have no means of estimating his riches. The Brandreth House corner of Broadway and Canal-street is owned by him, and we presume he owns whole squares of real estate in other parts of the city.

Doctor Ayer, of Lowell, came very near ruining all his relatives after he started his pills, sarsaparilla, and cherry pectoral. It was a tedious time he had in fighting, advertising, bills, and other expenses. He spent what little he had himself, borrowed all his relatives, until at last his medicines began to make returns, and from that time, some twenty years, he has been making money. He owns a paper-mill where he makes a peculiar paper, which he claims is not easily counterfeited, in which he wraps his various preparations. People who estimate his wealth run him into millions

At one time he was, if he is not still, a heavy stockholder in the *New York Tribune* Association. Such men are apt to leave their imprint, even if they make their money in the manufacture of patent medicines.

William B. Moffat was a silk merchant in New York. Besides being a bankrupt, his health had become very much impaired from over-work and trouble of one kind and another. In his extremity he conceived the idea of making a pill and bitters. They cured his infirmities and made a millionaire of him in less than twenty years. Persons familiar with New York can tell the number of magnificent stores he owns in Broadway and other parts of the city. He died some years ago, but the pills and bitters did not. The heirs carry on the business as usual.

Perry Davis, the pain-killer man; Donald Kennedy, proprietor of the great medical discovery, who has refused one hundred thousand dollars for his rights; Seth W. Fowle, who bought Wistar's Balsam of Wild Cherry from Isaac Butts, of Rochester; Demas Barnes, of New York, the largest patent medicine depôt in America; Hostetter, Helmbold, the Mexican mustang liniment man, and a thousand others in the United States whom we have not time to mention, can count their hundreds of thousands, all made in the patent medicine trade. Isaac Butts, of Rochester, sold the right to manufacture Wistar's Balsam of Wild Cherry, in the Eastern States, to Seth W. Fowle, of Boston, for twenty-five thousand dollars, and put the greater part of the money in telegraph stock, which soon went up in value, so that with its dividends and what he had made in the Rochester *Union*, he has retired with about a couple of millions of dollars.

THE INTRODUCTION OF CHLOROFORM.

MR. GEORGE WALDIE, of Linlithgow, a chemist and druggist, has published a pamphlet entitled, "The True Story of the Introduction of Chloroform into Anæsthetics." In this memoir Mr. Waldie claims for his brother, Mr. David Waldie, now of Barnagore, Calcutta, much of the credit due to the pioneers of so valuable a discovery—a credit which he intimates Sir James Simpson almost entirely grasped for himself, unfairly ignoring those who had aided him in the discovery. David Waldie was, in 1847, chemist to the Liverpool Apothecaries' Company, and as we have reason to implicitly trust his history of the circumstances, guarding ourselves only, as we shall show immediately, from any bias, we give the story in his own words:—

Educated to the medical profession myself, I had devoted my attention to chemistry, and had got the appointment of Chemist to the Liverpool Apothecaries' Company. At their establishment a preparation was made called Chloric Ether, not very generally known, and in use, I believe, only amongst limited circles. The mode of manufacture followed did not yield it very uniform in strength, and I am not certain if its nature was very correctly understood. On examination, I found it to consist of chloroform mixed with undecomposed spirit employed for its preparation, and some other minor products of the operation. As an improvement, I adopted the plan of washing out the extraneous matters, in order to get the chloroform pure, which was then dissolved in a measured quantity of pure spirit, so as to make a solution of uniform strength and quality. I thus became familiar with the principal properties of chloroform, and knew it to be a volatile liquid, yielding a pleasant fragrant vapour

On occasion of a visit to Dr. Simpson, when in Scotland in 1847, he spoke to me of his trials of various vapours, in his endeavours to discover something else than ether, at that time employed to some extent for anæsthetic purposes, amongst others mentioning chloric ether, the chemical constitution of which he was evidently not aware of. This I explained to him, showing him that it was chiefly vapour of alcohol that would be inhaled, and advised him to try the pure chloroform, which appeared to me likely to be suitable. I promised also to prepare some as soon as I could on my return to Liverpool, and send it to him for trial. Unfortunately the laboratory of the company had previously been destroyed by fire, and was not then restored, so that I could not prepare it; and, in the meantime, Dr, Simpson had procured some chloroform, and discovered its effects by inhalation.

When the news came, not long after my return to Liverpool, I felt pleased at the success of my recommendation, but was also mortified from these unfortunate circumstances I had not been able to do something in carrying it out. I had inhaled both nitrous oxide gas and ether vapours before, and felt interested in the inquiry; and have no doubt but that if I had been in a position to prepare the chloroform, I should at once have discovered its properties on my own person. But when the small pamphlet announcing the discovery was introduced to my notice, I was further disappointed, for all the acknowledgment made by Dr. Simpson of my suggestion was, that amongst chemists with whom he had conversed on the subject, Mr. Waldie first mentioned chloroform as likely to answer, and this, too, was given not in the text, but in a footnote.. I at once saw that this was well adapted, even if not intended, to lead to my share in the matter being altogether lost sight of; and the account of my recommendation as merely a matter *mentioned*, was a parsimony of acknowledgment for which I was not prepared.

This statement was written in 1870, when the fame of chloroform had spread throughout the medical profession, and when it had gained the distinction of being described as one of the most valuable discoveries of the century. We print below entire—for it is intrinsically interesting—Mr. Waldie's paper on "Chloroform: the new agent for producing insensibility to pain, by inhalation," read at the meeting of the Liverpool Literary and Philosophical Society, held at the Royal Institution, November 29th, 1847. Chloroform was then in its infancy, and no one foresaw to what greatness it was destined to attain. But this one thing is evident, and stands out very prominently in the narrative which follows, viz., that Simpson had a clear aim before him, that he had made up his mind to discover a reliable anæsthetic, and that in pursuance of this object he was persistent in his search for information. Waldie gave him the hint which made him such a benefactor to suffering humanity, and he ought to have made a more ample acknowledgment of his indebtedness. This, says Mr. Waldie in another place, "is all I ask. . . . . Willingly do I acknowledge that the discovery was Dr. Simpson's, and the honour his due. . . . . Out of all the great renown and more substantial advantages the discovery brought him, he might easily have spared this; but irrespective of this, I considered it only an act of justice, and I did not get it."

The following is the paper, the title and occasion of which we have just referred to:—

"The property of various substances existing in the state of gas or vapour to affect the animal constitution has been long known, more particularly with respect to the production of deleterious or poisonous effects; and the same fact has been observed in the case of substances found in ordinary circumstances in the solid or liquid form, when brought by artificial means into the state of vapour, and conveyed into the lungs. And this has been observed more generally in the class of substances called narcotics than probably in any other; in the smoking of opium or tobacco, for instance, or in the intoxicating effect of the atmosphere in apartments containing large quantities of wine or spirits.

"The discovery, in the latter part of last century, of the constitution of the atmosphere, and the elimination of various substances in the gaseous or aëriform state, possessing very distinct and different properties, opened up a field of investigation on this subject previously unknown. The remarkable and highly interesting difference in the relations of oxygen and carbonic acid to combustion and life, led to the knowledge of these properties in other gases and vapours.

"Great expectations, based on theoretical considerations, were entertained at that time by many, of the probable utility of gaseous bodies as remedial agents. Dr. Beddoes, one of the most enthusiastic of these theorists, thought that all diseases might be cured by breathing a medicated atmosphere, and in 1798 opened a pneumatic institution at Bristol, for that purpose. It is well known that his expectations were disappointed, as the scheme was unsuccessful; but it was the means of introducing to him Davy, then a youth, who was recommended to him to conduct his chemical processes, and who with great boldness investigated the physiological properties of various gases by trying experiments on himself. From these experiments resulted the discovery of the curious properties of nitrous oxide gas. These were giddiness, a delightful sense of thrilling in the chest and limbs, acuteness of hearing, brilliancy of all surrounding objects, and an unconquerable propensity to muscular exertion or laughter; these were of short duration, and were not followed by the depression and nausea consequent on the use of spirits or opium. The effects, however, were not uniform, some persons having been affected with weakness, tendency to faint, loss of voice, and insensibility. In fact, its effects vary, not only from differences of constitution in various individuals, but also according to the quantity inspired, and as in the case of the substances immediately to be noticed, insensibility and unconsciousness always result, if it be taken in sufficient quantity.

"It has been long known, though, perhaps, not very generally, that the vapour of ether possesses similar properties to nitrous oxide. At what time this was first observed I am not aware; but the earliest notice I have found of it is in the *Quarterly Journal of Science* for 1818:—

"'When the vapour of ether mixed with common air is inhaled, it produces effects very similar to those occasioned by nitrous oxide. A convenient mode of ascertaining the effect is obtained by introducing a tube into the upper part of a bottle containing ether and breathing through it; a stimulating effect is at first perceived at the epiglottis, but soon becomes very much diminished, a sensation of fulness is then generally felt in the head, and a succession of effects similar to those produced by nitrous oxide. By lowering the tube into the bottle, more of the ether is inhaled at each inspiration, the effect takes place more rapidly, and the sensations are more perfect in their resemblance to those of the gas.

"'In trying the effects of the ethereal vapour on persons who are peculiarly affected by nitrous oxide, the similarity of sensation produced was very unexpectedly found to have taken place. One person, who always feels a depression of spirits on inhaling the gas, had sensations of a similar kind produced by inhaling the vapour.

"'It is necessary to use caution in making experiments of this kind. By the imprudent inspiration of ether, a gentleman was thrown into a very lethargic state, which continued, with occasional periods of intermission, for more than thirty hours, and a great depression of spirits. For many days the pulse was so much lowered that considerable fears were entertained for his life.'

"These facts may be noticed as a remarkable instance of how long men may stand on the brink of a discovery without reaching it, to which subsequent reflection may show them that many circumstances have pointed. The discovery now to be treated of, we owe to the United States of America. According to his own statement, Mr. Horace Wells, a dentist, of Hartford, Connecticut, in reflecting on the fact that individuals, either in a state of high excitement from ordinary causes, or when intoxicated with spirituous liquors, may receive severe wounds without manifesting the least suffering, was led to inquire whether the same result would not follow from the inhalation of some exhilarating gas, the effects of which would pass off immediately, leaving the system none the worse for its use. Accordingly, in the fall of 1844, he had himself a tooth extracted, and performed the same operation on others, under the influence of nitrous oxide gas, without pain. He states, further, that he communicated the result of these experiments to Dr. Morton, Dr. Jackson, and others in Boston. Whether as the result of such communication, or from his own reflection on the effects of nitrous oxide and the vapour of ether, Dr. Morton of Boston, in September, 1846, extracted a tooth from a stout, healthy man, whom he had caused to inhale the vapour of ether, and who avowed a total unconsciousness of its removal. From that time the discovery was made known in America, and speedily found its way to this country, where it has met with the advocacy, scepticism, and opposition, which are the usual fate of such novelties.

"Dr. J. Y. Simpson, Professor of Midwifery in the University of Edinburgh, who has, since the introduction of ether inhalation into this country, carried on the investigation of the merits of the practice with the greatest ardour and assiduity, had been for some time on the search for other vapours possessing the properties of ether without certain disadvantages connected with its use, the result of which has been the discovery of such properties in chloroform, through the following circumstances:—

"The term chloric ether was at one time applied to the chloride of olefiant gas, or Dutch liquid of chemists. In 1831, Mr. Guthrie, an American chemist, was led, by a statement in Silliman's 'Elements of Chemistry,' that the alcoholic solution of chloric ether was a grateful and diffusible stimulant, to attempt a cheap and easy process for its preparation. This he did by distilling a mixture of spirit and chloride of lime, collecting the product so long as it came over sweet and aromatic. This both Guthrie and Silliman supposed to be a solution of the chloride of olefiant gas, and called it chloric ether. In reality, it was an impure spirituous solution of Chloroform.

"In 1831 Soubeiran, and in 1832 Liebig, prepared liquid by a similar process, and separated the chloroform. Dumas, in 1834, purified it fully, and made an accurate analysis of it; he found it to be composed of twelve parts carbon, one part hydrogen, and 106½ parts chlorine, and named it chloroform, from being analogous to formic acid in its composition, but containing chlorine instead of oxygen. From theoretical considerations Liebig termed it perchloride or terchloride of formyle,—in chemical symbols, C_2HCl_3. It is a colourless transparent liquid, of specific gravity nearly 1500, or about 1½ times the weight of water; it boils at 141° Fahr., the vapour having a specific gravity nearly four times that of air; it quickly evaporates at ordinary temperatures, but does not burn easily; it has a sweet taste and agreeable smell; is soluble in all proportions in strong spirit, but very sparingly soluble in water, to which it communicates its taste in a small degree.

"To the best of my knowledge, from the result of many inquiries, it seems to have been introduced into this country as a medicinal agent, first in Liverpool, where, indeed, in the form of a spirituous solution, it has been more known than in any other part of the country, and from which, I believe, the knowledge of its therapeutic properties has extended. About the year 1838 or 1839, a prescription was brought to the Apothecaries' Hall, Colquitt-street, one ingredient of which was chloric ether. No substance being known there of that name having the properties of that with which the mixture had been previously prepared, Dr. Brett, then the company's chemist, in investigating the subject, found, in the United States Dispensatory, the formula for its preparation which has been noticed above, and prepared some. Its properties pleased some of the medical men, particularly Dr. Formby, by whom it was introduced into practice in this town. After coming to take charge of the company's laboratories, I found that the method of preparation yielded a product which was not of uniform strength, and sometimes of disagreeable flavour. Accordingly, I altered the process, by separating and purifying the chloroform, and dissolving it in pure spirit, by which a product of uniform strength and sweet flavour was always obtained. Thus prepared, it is much superior to specimens I have seen of London manufacture. Those members of the profession who are in the habit of using it, prefer it greatly to sulphuric ether, as possessing all its remedial value, and being very much more agreeable.

"The vapour of the so-called chloric ether seems to have been tried as a substitute for sulphuric ether in February or March last, but without very satisfactory results, which, indeed, could scarcely be expected, unless the vapour of alcohol possessed the same properties, it being composed principally of alcohol. When in Scotland, in October last, Dr. Simpson introduced the subject to me, inquiring if I knew of anything likely to answer. Chloric ether was mentioned during the conversation, and being well acquainted with its composition, and with the volatility, agreeable flavour, and medicinal properties of chloroform, I recommended him to try *it*, promising to prepare some after my return to Liverpool, and send it to him. Other engagements, and various impediments prevented me from doing this so soon as I should have wished, and in the meantime Dr. Simpson having procured some in Edinburgh, obtained the results which he communicated to the Medico-Chirurgical Society of Edinburgh on the 10th of November, and which he published in a pamphlet entitled, 'Notice of a New Anæsthetic Agent as a Substitute for Sulphuric Ether in Surgery and Midwifery.'

"As an inhaled anæsthetic agent, he states that chloroform possesses the following advantages over ether:—

"A much smaller quantity is required to produce the effect; it is, therefore, more portable and transmissible than ether, and though more costly, from the smallness of the quantity required will probably be less expensive.

"Its smell is pleasant, and does not remain attached to the clothes of the operator, nor does it exhale in a disagreeable form from the lungs of the patient, as so generally happens with ether.

"Its action is more rapid and complete, and generally more persistent, so that the surgeon's time is saved.

"Most of those who have breathed both, declare that the inhalation and influence of chloroform are much more pleasant and agreeable than those of ether.

"The quantity required to produce insensibility is from fifty to one hundred drops generally, more or less. It is applied by pouring it into a hollow sponge or a pocket handkerchief, and holding it over the mouth and nostrils, not too closely at first, so that the vapour may be fully inhaled.

"It would be out of place here to go into a detail of the phenomena produced by the inhalation of these agents, or a minute examination of cases. I shall, therefore, only briefly mention what may be most generally useful and interesting.

"The most essential point in the administration of these agents is to know when it has been carried far enough. Their effects vary with the quantity of vapour inhaled, and have been divided by Dr. Snow, in his treatise on ether inhalation, into five degrees. These run gradually into each other, and are not always clearly to be distinguished, but may be described as follows:—

"In the first degree the person retains a correct consciousness of where he is, and what is occurring around him, and a capacity to direct his voluntary movements; the feelings are usually agreeable, often highly so; but this is not a proper state for performing operations. In the second degree mental functions may be exercised and voluntary actions performed, but in a disordered manner; the movements are instinctive, guided by volition though not by knowledge or reason; there may be struggling, screaming, or laughing; the patient may be tractable or obstinate; dreams occur in this stage. An operation would cause pain, though the patient might, perhaps, not remember it; this stage is not proper for operations. In the third degree there is no evidence of any mental function being exercised, and, consequently, no voluntary motions occur; but muscular contractions, in addition to those concerned in respiration, may sometimes take place as the effect of the ether, or of external impressions. The eyes are stationary, the breathing is usually regular and deep, though it sometimes stops for a time, and there may be muscular rigidity; in operations there may be some flinching and moaning, but no articulate sound, and there is no recollection of what has been done. In the fourth degree no movements are seen except those of respiration, and patients are incapable of being influenced by external impressions. The eyelids fall, the eyes are fixed, the muscles are all relaxed, the face is placid and expressionless, the breathing regular and automatic, and sometimes there is snoring, a state which would be alarming if we did not know the cause of it. In this the patient remains perfectly passive under every kind of operation. In the fifth degree, not witnessed in the human being, the respiratory movements are more or less paralysed, and become difficult, feeble, and irregular. If continued, this ends in death; yet, according to Dr. Snow, the animals always recover if the vapour is discontinued before the breathing has actually ceased.

"These various stages disappear in the inverse order in which they make their appearance, that is, the third succeeds the fourth, the second succeeds the third, and the first concludes. It is to be observed that the degree of insensibility is greater in a stage when retiring than when advancing; that is, for instance, a patient might feel while in the second stage, during its advance to the third, what he would not feel in the same stage during its retiring from the third.

"The proper stages for operations are, according to Dr. Snow, the third or fourth; the latter if there be any muscular movement or rigidity in the third stage. If there is the least snoring, the operation may be commenced, and the ether should be temporarily withdrawn till the snoring ceases. The insensibility may be kept up for a long time without risk, by allowing partial recovery occasionally by withdrawing the inhaled agent for a time.

"Dr. Simpson points out the following conditions as necessary to be attended to in producing anæsthesia. 1st. Perfect quiet and freedom from all sources of excitement; 2nd. Avoiding as much as possible the stage of excitement by giving a full dose as quickly as possible, so as to produce the state of insensibility as speedily as possible; and 3rd. Steadfastly deferring the commencement of the operation till the state of insensibility has been fully produced. It ought also to be observed, that it is advisable not to administer these agents very soon after a meal, as the desired effects are not so easily produced.

"Patients often recover promptly, frequently after some delay, with, perhaps, wandering of the mind, or even some excitement. Faintness and languor are not unfrequent for some time after recovery, and sometimes sickness, or even vomiting, particularly if shortly after a meal.

"Anæsthesia, or insensibility to pain, by the inhalation of the vapour of ether or chloroform, has been induced, not only in surgical operations, but in neuralgia and some other painful diseases; in passing otherwise intolerable galvanic currents through tumours; to relieve spasm, as in hooping cough; and in parturition.

"As an example bearing on the relative merits of ether and chloroform, I may give the following case with which I have been favoured by Dr. Imlach:—The patient, a lady, was afflicted with severe facial neuralgia, coming on every night, after assuming the horizontal position in bed. Opium, henbane, camphor, iron, and arsenic, were all tried as remedies and failed. Ether inhalation stopped the paroxysms; an ounce and a half was required, and the breath continued loaded with its smell during the day, the patient losing strength and appetite. Chloroform was then tried; it removed the pain and produced sleep, and next night it was so much better that none was required; it was repeated five times in all on alternate nights, with the use of bebeerine for three days; the health, strength, and appetite became much improved, and there was no further occasion for applying the chloroform, as the pain did not return and the sleep was restored.

"In regard to the experience of the sufferers, if we can so designate them, Dr. Forbes gives us the following as the result of inquiries in the London hospitals, by personally questioning fifty-four patients who had undergone, principally, capital operations. 'They were unanimous in their expressions of delight and gratitude at having been relieved from their disease without suffering. In listening to their reports, it was not always easy to remain unmoved under the influence of the conceptions thereby communicated of the astonishing contrast between the external physical condition of the mangled body in its apparent tortures on the operating table of a crowded theatre, and the really happy mental state of the patient at the time.'

"Dr. Simpson also remarks, with respect to its employment in parturition:—'I have never had the pleasure of watching over a series of better and more rapid recoveries, nor once witnessed any disagreeable result follow to either mother or child, whilst I have now seen an immense amount of maternal pain and agony saved by its employment. And I most conscientiously believe that the proud mission of the physician is distinctly two-fold, namely, to alleviate human suffering, as well as to preserve human life.'

"Such is a sketch of this remarkable discovery of ether inhalation, and such the promise of improvement in the addition to it of chloroform, a substance hitherto interesting only to the scientific chemist, but now of importance to all who seek relief from the sufferings to which their bodily constitution renders them liable.

"A discovery such as this is sure to make its way, if experience should not prove that it is attended with counteracting disadvantages. All that its advocates can fairly demand is an impartial trial of its merits. The irrepressible desire in human nature to escape from pain will compel this, even though it may be opposed by the timidity, prejudices, dulness, indolence, or callousness of individuals. The practice numbers among its supporters names of the highest rank in the medical profession,—men who will carry on the investigation of its applicability and suitableness to the various cases of human suffering with the ardour and perseverance which the importance of its claims demand, but whose judgment and intelligence will not allow them to admit these claims, except to such an extent as may be warranted by the experience arising from a judicious observation of facts, the only substantial basis on which we can ground its title to be called an important addition to the healing art."

Our Foreign Correspondence.

FRANCE.

Paris, September.

THE effect of the conscription on business is amply demonstrated just now. Several pharmaciens have been absolutely compelled to close their *officines,* through their assistants and porters all falling under the sweeping ban of the conscription law, which certainly is no respecter of persons. They can, however, do this without much pecuniary loss, as those who remain have to support all the heavy expenses of a useless *personnel,* whose only employment is scraping lint and tearing superannuated night-shirts into bandages. More than 300 assistants and students of pharmacy have volunteered their services for the military ambulances, and all the medical and pharmaceutical students, who passed their examination last week at the military hospital of Val de Grâce, are at the disposition of the Government for transfer to the various depôts for the sick and wounded. The service is not without danger, as it appears that both sides accuse the other of firing on the ambulances, whose red cross on a small patch of white ground seems to me scarcely sufficiently conspicuous to be plainly visible at the distance of a Chassepot range. French army surgeons, with whom I have conversed, think the wound inflicted by the Prussian bullet to be considerably larger and more lacerated than that inflicted on the enemy by the Chassepot bolt. This arm, being much smaller at the muzzle than at the breech, elongates the conical bullet into a rifled bolt about two inches long, which, if striking a bone otherwise than in almost a direct plane, is easily bent and deviated from its true course. Sword-cuts about the neck and arms are frequent, the bullet-wounds being chiefly confined to the legs and feet, which is not to be wondered at or considered, as some newspaper correspondents have thought fit to state, a reason that the Prussian gun does not carry as far as the Chassepot, and that the balls, falling short, hit the men near the ground. It is but natural that a man shot in the head or trunk should have but little chance of surviving, whereas wounds in the lower extremities are generally curable. A chasseur, whose toes were shot away, told me that a ball struck his Chassepot, smashing it and carrying it away. He snatched up a dying comrade's rifle, and fired away all his cartridges before leaving the field. We have had several opportunities of examining the ambulances, and the drug-stores on wheels which follow in their wake. This service, organised by Societies and entirely supported by voluntary subscriptions, is doing an immense amount of good. Before leaving Paris for the scene of operations they form a procession, passing through some of the leading streets and boulevards. The surgeons, dispensers, and attendants, are all *en tenue de campagne,* each man with the red Geneva cross on his arm, the spring-carts containing beds and hammocks, the portable *pharmacie* well stocked with instruments, drugs, bandages, and cartloads of lint, and the men with butterfly-nets in which they receive the generous offerings of many a poor parent whose sons may want their welcome aid. Amongst trade novelties I may mention a new artificial poultice, several thousands having been presented to the *Société de Secours aux Blessés.* It consists of an oval impermeable tissue with a porous centre, faced with fine linen, and can be washed with ease. They are patented under the name of Epithème by M. Brick, of the Palais Royal. Dehuramburé's Oil of Choolmoogra is another new speciality, introduced at a rather unfortunate epoch. It is produced from the *Gynocardia odorata* said to be the most powerful anti-scorbutic extant.

The "rule of thumb" correspondence of the official journal seems to be a somewhat entertaining theme. The autocratic power of the Society over its individual members appears to be constitutionally unlimited. Douceurs, erasures, and prosecutions, all jumbled together *secundem artem.* But, as Stuart Mill remarks, no tyranny is more tyrannical than that of the majority; and the rights of society over its individual members consist only in preventing the infliction of harm on the many, and not in coercing individual opinions to coincide with the very fallible conclusions of a few elect. Is not the end of all education tending to develope the intellect, to render one independent of mechanical means? Ought a member of the R. G. S. to fetch out an atlas and grope over an index if asked where Timbuctoo is? Or does a *cordon bleu* weigh out his oil, eggs, and sweet herbs, when concocting that king of emulsions, a *mayonnaise?* How would an ultra-conscientious pharmacist divide four grammes (ʒj) of bismuth into nine packets? And I may here mention that it is the general practice of French physicians to order an odd quantity of powder, mixed or simple, to be divided into an odd number of packets. Do you think M.D. has based his calculations on such an infallible basis as to have arrived, with the most mathematical precision, at the conclusion that $\frac{60}{9}$ grains of bismuth administered every three hours will cure his patient's diarrhœa? Should the patient unfortunately allow ten minutes to elapse over and above the prescribed interval, it is not presumptuous to imagine this to be a much greater infraction of M.D's directions than the administration of a fraction of a grain less at twelve or more at three. The "rule of thumb" twaddle, at the end of the last five numbers of the official journal, is really pitiable, as if all reasoning intelligences did not appreciate the importance of an exact dose of calomel or opium, and the comparative latitude allowed to the patient when a teaspoonful of magnesia is ordered.

A national pharmaceutical association is about to be formed in France, under the following title, *Association Générale de Prévoyance, de Protection et de Secours Mutuels des Pharmaciens de France,* and one of its first statutes expels any member who advertises a remedy in other than medical or pharmaceutical journals.

The death is announced of Dr. Bolley, the celebrated Professor of Chemistry at the Polytechnic School, Zurich, which took place suddenly on the 3rd of August. He was a native of Heidelberg, where he was born in 1812.

Chemistry and Pharmacy.

BY SIDNEY W. RICH.

PEPSINE.

PROFESSOR R. V. TUSON has communicated to the *Lancet* an important report of a series of experiments on the digestive powers of the various manufactures of medicinal pepsine at present usually prescribed. His samples, he says, included one of a German maker and some French.

The results arrived at corroborate substantially those obtained by Dr. Pavy seven years ago, although the methods of investigation differed.

Ten samples of pepsin, obtained from different sources, were examined. The preparations of the several makers are distinguished from one another by letters in the followlowing manner :—

A }
A1 } Same make, but purchased at different houses.
B }
B1 } Ditto, ditto.
C }
C1 } Ditto, ditto.
C2 }
D
E
F

Description of the Experiments. — Fresh eggs were kept in boiling water for an hour, and then allowed to get quite cold. After depriving them of their shells, the whites were cut into the thinnest possible slices, great care being taken to reject any portions of yelk, as well as all slices of white of unequal thickness. A weighed portion of coagulated albumen thus prepared was placed in a two-ounce wide-mouthed bottle, covered with distilled water containing 1 per cent. by volume of concentrated hydrochloric acid. These operations were conducted during the latter part of the day. Next morning the required amount of pepsine was weighed out and added to the mixture of albumen and dilute hydrochloric acid. The bottle and its contents were then placed in a water bath and kept at a temperature of 38° C. (100·4°F). Digestion was regarded as complete when, at the end of four hours, particles of albumen could no longer be seen, and when the insoluble residue consisted of a very minute quantity of fibrous or membraneous matters only. These observations were easily made, except in the experiments upon samples of pepsin containing large quantities of starch. In such cases, when digestion appeared to be finished, the result was not recorded until the contents of the bottle had been carefully elutriated, or strained through fine muslin, so that it might be ascertained with certainty, by the appearance of the residue in the bottle or on the filter (muslin), whether or not the whole of the albumen had been dissolved.

In the experiments upon albumen, 5 grammes of coagulated egg-albumen and 25 cubic centimetres of distilled water, containing 1 per cent. of hydrochloric acid were employed. Progressive proportions of the various pepsines were added to such mixtures, two sets of experiments being in every instance continued for the sake of comparison. The albumen was digested by ·05 grammes of pepsine (A); ·5 of B were required; 1·25 of C; while of D, E, and F, 5 grammes were used without success. A somewhat similar series of experiments were then conducted on fibrine, with analogous results. The samples D, E, and F, were, therefore, discovered to be absolutely worthless, while the difference was very marked between A, B, and C. The A1, B1, and C1 and C2, were not found to differ from those of the same letters, the experiments on which are referred to. Professor Tuson concludes his paper with the remark which he gives as an act of duty to the medical profession, and of justice to the manufacturers, that the pepsine (A) was the preparation of Messrs. Bullock and Reynolds, of Hanover-street, Hanover-square.

ON SOLUBLE IODIDE OF STARCH.

According to M. Petit, iodide of starch prepared by the process described below is entirely soluble, of nearly constant composition, and always of a beautiful blue colour :—

Take
Iodine, 12 grammes.
Ordinary starch, 100 grammes.
Ether, q. s.

Dissolve the iodine in a sufficiency of ether, pour the solution on the starch, and triturate until the ether has completely evaporated. Transfer the powder to a porcelain capsule, and expose to a temperature of 212° over the water bath. In making considerable quantities it is necessary to stir the mixture. In the first part of this operation considerable quantities of iodine vapour are disengaged, but this soon ceases. The iodide of starch is exposed to heat for half an hour, during which space of time it acquires the property of being soluble in hot water.

From soluble iodide of starch thus obtained, the syrup may be prepared by dissolving the former in hot water, and then adding a sufficient quantity of sugar. By employing

Iodide of starch, 25 grammes,
Water, 345 grammes,
Sugar, 635 grammes,

a syrup is obtained containing one gramme of iodine per kilogramme, and of which each spoonful of 20 grammes corresponds to 20 milligrammes of iodine.

NEW SOURCE OF CITRIC ACID.

Professor O. Silvestri has recently discovered that a large quantity of citric acid may be extracted from the fruit of the *Cyphomandra betacea*, a plant found here and there in the gardens of Sicily. The plant comes originally from Mexico, and has spread over Peru, and other parts of South America. The fruit yields, by analysis, from 1 to 1·5 per cent. of pure citric acid.

THE ALKALOIDS CONTAINED IN OPIUM.

M. O. Hesse has discovered several new alkaloids in opium. The alkaline fluid obtained by treating the opium with soda or lime is treated with ether, and the latter agitated with acetic acid. The acidulous liquid separated from the ether is poured slowly and with stirring into a dilute solution of soda employed in excess; a resinous precipitate is formed, and slowly agglomerates. After twenty-four hours the precipitate is separated, an excess of hydrochloric acid added, and subsequently of ammonia, which latter reagent causes the precipitation of the basis. The alkaline fluid holding the precipitate in suspension is treated with chloroform, and the latter subsequently with acetic acid. Excess of ammonia, added to the acid solution, yields a coloured resinous precipitate, which soons becomes crystalline, and consists of impure *canthopine*. After twenty-four hours the mother liquor is treated with soda sufficient to displace the ammonia of the ammoniacal salts, when a precipitate of *codeine* separates. This is removed by repeated shaking with ether, codeine being more easily soluble in this menstruum than the other alkaloids contained in the liquor. These, however, *meconidine*, *codimine*, *laudamine*, and another termed x by the author, may be dissolved by ether after the addition of chloride of ammonium to the fluid. By slow evaporation laudamine crystallizes out, the other alkaloids constituting an amorphous mass after complete evaporation. The ethereal solution should, however, be separated from the crystals of laudamine before it is completely evaporated, and be treated with a solution of bicarbonate of sodium; by evaporation the ethereal solution then readily yields crystals of codamine. As soon as the formation of these has ceased, the ethereal mother-liquor is poured off and treated with acetic acid; this acid solution is then saturated with chloride of sodium, which throws down the chlorhydrate of meconidine, while the base x remains in solution. The author then describes in detail the methods of purifying the several bases, and also the properties which characterise them.

COD-LIVER OIL RENDERED TASTELESS AND INODOROUS.

It has occurred to M. C. Paresi, that by treating cod-liver oil with ground roasted coffee the disagreeable taste and odour of the former might be removed. By experiment, he found that by the treatment the oil lost nearly the whole of its disagreeable taste and odour, a slight fishy odour alone remaining. Another advantage is that the oil preserves all its nutritive properties. The following is the method employed:—

Cod-liver oil, 20 parts; ground roasted coffee of good quality, 1 part; pure powdered ivory black, ½ part.

The whole is transferred to a glass flask, carefully mixed and heated over a water-bath to 120° or 130° F. for a quarter of an hour, care being taken to keep the vessel corked. The heat is then removed, and the mixture allowed to stew for three days, with occasional agitation. It is then filtered, and a very limpid oil of an amber colour thus obtained. Its odour and taste recall that of coffee, while the fishy taste is not very pronounced. The addition of coffee to cod-liver oil may also perhaps augment the nutritive and therapeutic properties of the latter.

The *Medical Times and Gazette* gives the following summary of the history of chloral hydrate:—Chloral, C_2HCl_3C, was discovered by Baron Liebig in 1832, but was known only as a chemical curiosity till last year, when Liebreich of Berlin, introduced its hydrate, made by simply adding water to chloral, as a medicine of great power as a hypnotic, and anæsthetic. The hydrate of chloral contains 90 per cent. of chloral, and dissolves so freely in water that a saturated solution contains 50 per cent.; and dissolved in excess of water it is, when pure, rather agreeable to the taste than not, a secondary, but by no means unimportant point in its favour. Liebreich's discovery of its value as a medicine is, as Dr. Richardson has observed, a brilliant illustration of a modern advance in therapeutics—"that, namely, of determining the action of a substance on a theorectical estimate, based on a precise knowledge of the chemical and physical properties of the substance." When the hydrate of chloral is treated with an alkali it is resolved into chloroform and a formate. The blood is an alkaline fluid; therefore, thought Liebreich, if the hydrate be introduced into the organism, "every small particle of it will consume the surrounding quantity of alkali, and the decomposition will be completed only after the required amount of alkali has been furnished by the blood. In the smallest point of time the minimum quantity of chloroform would be formed, and pass to its first place of action—viz., the ganglia cells of the cerebrum." On account of there not being a sufficient amount of alkali the formation of chloroform would take place, not explosively as it were, but gradually and slowly; a minimum quantity being formed in a unit of time, and acting first on the ganglia of the cerebral hemisphere, afterwards on the ganglia of the cord, and, lastly, on those of the heart. Liebreich first experimented with the substance on animals, and, finding his expectations answered, extended his researches to the action of chloral on man, and then communicated a report on the subject to the Academy of Sciences of Paris, in 1869, and has since published at least one valuable pamphlet on its properties. In August of the same year, during the meeting of the British Association at Exeter, specimens of the medicine, and Liebreich's report, having been received in England, Dr. Richardson, at the request of the Association, examined into, and reported on, its properties. His experiments, made at that time, and more fully and extensively somewhat later, confirmed Liebreich's report, and considerably enlarged our knowledge of the valuable properties of the hydrate, and he also inclined to believe in the correctness of Liebreich's theory of its mode of action. M. Personne also supports that theory, and has advanced the proof of its truth; when chloral is mixed with fresh blood chloroform is evolved; and M. Personne has also demonstrated the presence of chloroform in the blood of dogs to whom chloral alone has been administered. We may add also, before leaving this point, that Dr. J. B. Russell has found that typhus patients are very sensitive to the action of chloral, so that it must be administered to them in unusually small doses, and he points, in explanation of this, to the theory that the alkalinity of the fluids is increased in typus; and of course the more alkaline the blood, the more rapid the production of chloroform through the decomposition of the hydrate of chloral.

Veterinary Notes.

BY W. HUNTING, M.R.C.V.S.

OPHTHALMIA.

The eye is composed of a number of super-imposed layers differing in structure, and enclosing certain solid and fluid refracting media. One or more of these composing structures may be affected, and that in various ways, so that a scientific classification of eye diseases presents a very long list, and one utterly unintelligible to general readers. The term ophthalmia, literally inflammation of the eye, which we shall apply only to inflammation of the anterior superficial parts, is usually subdivided into simple, pustular, catarrhal, purulent, and in the human subject, gonorrhœal ophthalmia.

The latter we never meet with in the horse, and the others we may look upon as stages or slight modifications of the same disease.

Whether ophthalmia arise as the result of cold or injury, a similar train of symptoms follow, and similar treatment is indicated. According to the severity or stage of the disease, the symptoms differ.

The advent is always sudden, beginning with an extra flow of tears, partial closure of the eyelids, and intolerance of light; the eyelids may become swollen, and the watery discharge assume a purulent form.

Much swelling of the lids and orbit would point to a blow as the cause, though in old or weak animals the loose structure of the parts allows rapid and extensive filling of the lids without any injury.

Before describing the appearance of the eyeball, I would offer a remark on the method of examination. The horse's head must not be exposed to a very bright light, as he then resists any separation of the lids; on the contrary, in a moderate light the lids are voluntarily separated for a short distance, if the case be mild and the head left free. When necessary to open the lids with the finger and thumb, the globe of the eye must not be forcibly pressed upon, as such a proceeding forces forward "the haw," and spoils our view.

On exposing the eyeball, the white part presents a blood-shot appearance, due to the over-distension of many small blood-vessels; the coloured portion, which ought to be clear and transparent, may either be dim or quite cloudy. The inside of the eyelids is of a bright red colour.

In very few cases does simple ophthalmia produce any noticeable constitutional disturbance in the horse.

Treatment.—In a case presenting the symptoms here given, we must first discover the cause, especially being sure that no foreign body is retained between the lids—an oat-husk or a hay-seed may be concealed under the top lid, generally at the upper and outer part, or the flat oat-husk may be fixed on the eyeball; in any case it must be removed, and that speedily, for if left it soon becomes firmly fixed by exudation around it. A very effectual though rough method of removing chaff, &c., from the eye of cattle is adopted by farmers in Scotland and, for aught I know, in England. The forefinger is covered with a fold of a silk handkerchief, placed under the upper lid at its inner part, and then passed with a circular motion outwards, downwards, and back to the inner corner by the lower surface of the globe.

The same plan may be adopted with the horse when milder means fail. Much less injury can be done in this way than by unskilful use of forceps.

Any irritant being removed, our treatment is then for all cases similar. When once the red appearance of the inside of the lids and the blood-shot eye is established, I think cold water is contra-indicated, and strongly recommend warm fomentation to be persevered in for at least an hour, and then to be re-applied for half an hour at a time, three or four times a day; so long as the redness and pain are unabated no astringent or stimulant collyria is wanted, though an anodyne of one part of laudanum to sixteen of water may be applied by means of a camel's-hair brush. When the more acute symptoms have passed off we may beneficially use acollyria of either alum, nitrate of silver, or sulphate of zinc, five grains to the ounce of distilled water.

This should be applied with a camel's-hair brush three or four times a day, and remitted for a day if too irritating.

The eye should always be washed and cleared of any discharges before applying collyrium, as alum may coagulate the secretion and nitrate of silver be decomposed thereby. A favourite collyria with some is P. opium and Goulard's solution: it may be of use, but the ingredients are incompatible. Lead solutions should never be applied to the eye if any abrasion exist, as an opaque deposit is left.

Sometimes from the lash of a whip an abrasion of the eye is produced; the best application is sweet olive oil.

The blowing into the eye through a quill of powdered glass, burnt alum, carbonate of ammonia, &c., is much too commonly practised. When an eye recovers under such treatment it is in spite of great obstacles, and shows the power of nature.

In no case does scarification of the lids or bleeding from the "eye vein" do any good.

In all acute diseases of the eye a dose of physic at the commencement is good practice, a dark stable very desirable, and bad ventilation the greatest aggravation.

Should a syringe be used to wash the eye or apply a collyrium, the injection should always be at the outer corner and under the upper lid, as it then passes all over the globe, following the natural course of the tears.

DISPENSING COUNTERS.

We have the pleasure to present the following report of the committee who so kindly consented to undertake the labour of examining and deciding upon the merits of the various designs of dispensing counters submitted to us in competition for the prize offered by the proprietors of this journal. The designs were examined by each gentleman separately, and it is worthy of remark as a curious coincidence that in each case six designs were selected from the rest as being especially worthy of commendation, *and that these six were identical on each occasion.* We have formed the whole into a scrap book, adding explanatory remarks, and have sent the book to Liverpool for exhibition during the Conference. The designs have been in nearly every case so carefully drawn, and possess so many points of real and sometimes original merit that the collection will well repay the time of any chemist who will take the trouble to look through these pages. After it is returned from Liverpool the book will remain at this office as long as our friends the designers will allow us to retain their drawings.

REPORT OF THE COMMITTEE.

Twenty-nine designs have been offered for competition, many of which are excellently well drawn. Failure in most instances is owing to want of detail, but the whole series may be quoted as an indication of the advance of modern pharmacy.

The prize has been awarded to the Motto—

"Better late than never." *

Mr. Filmer Kidston, Duke-street, Union-street, Bishopsgate.

This design has several points of excellence, besides being the best arranged and most convenient as a Dispensing Counter. It is handsome in appearance, without being showy.

Honourable Mention is due to the following:—

I. *Hope.* Erasmus Beynon, 143, New Bond-street

Admirable in arrangement and execution, deserving the highest praise. Had the frontage been differently disposed the task of the committe would have been more difficult.

II. Work and Win. Edward M. Watson, Worle.

Good, sensible, compact, and useful.

III. Sorte tuâ contentus abi.

Fredk. W. Fletcher, Totton, Southampton.

Very attractive; well drawn.

IV. Spero Vincere.

Charles James Wallis, Tyler-street, Regent-street.

Very good indeed. Entirely to the credit of the designer.

Duplex. J. C. Young, 55, Butter Market-street, Warrington.

The arrangement for storing and dispensing poisons is very ingenious, but it would not be practicable.

(Signed) Thomas Hyde Hills,
Chas. H. Savory,
Joseph Ince.

The following is the description of the Prize Counter, the references being to the figures on the lithograph published herewith:—

"BETTER LATE THAN NEVER."

1. Rack for Spatulas, etc.; 2. Pewter Strainer for Measures, etc.; 3—5. Drawers; 6. Gas Furnace; 7. Retort and Funnel Support; 8. Recess for Scales; 9. Glass Fronted Cupboard for Poisons; 10. Ointment Slab; 11. Pill Machine; 12. Pill Machine Roller; 13. Cork Presser; 14, 15. Corks; 16, 17. Paper; 18—23. Labels; 24—27. Recesses for Books; 28.

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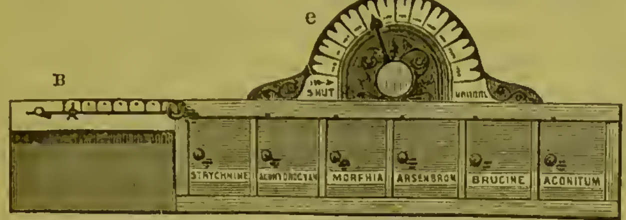
* A lithograph of Mr. Kidston's drawing is presented with this number of the Chemist and Druggist. The author's description is added to this report.

Paper Drawer; 29—33. Drawers for varied purposes; 34—38. Drawers for Bottles; 39. Towel Rack; 40—42. Spaces for Mortars, etc.; 43. Tin Rack for five essential oils required in pill-making, in half-ounce stoppered bottles.



We give above a sketch of the arrangement for storing poisons, designed by Mr. J. C. Young, of Warrington ("Duplex"), which is referred to in the above report. We are informed that the idea has been already registered by him. As an explanation of the engraving, we add the author's description :—

"The arrangements for the safe storage of poisons are represented by the series of cupboards marked A, and the index finger and dial plate, C. These cupboards are arranged more especially for the detection of any error that might occur through either accidentally or carelessly taking up the wrong bottle. Such a circumstance cannot possibly happen in the use of these cupboards, as will be seen from the following description of the mode of action :—Every door is labelled with the name of the drug it contains, and a label corresponding to each door is placed in one of the divisions of the dial plate, and the door of any particular cupboard can only be opened by moving the index finger on the dial plate opposite the drug required. For example, suppose the dispenser requires strychnine, he must move the index finger to the division on the dial plate marked strychnine, that movement liberates the door of the cupboard containing strychnine, which he can then readily open, all the other doors remaining fast; so that, if he requiring strychnine should by inadvertence or otherwise place the index finger to any other division, he would find on attempting to open the strychnine cupboard the door would be fast, and so detect his error, the simple principle being that only one cupboard can be opened at one time, and that one must correspond with the one indicated on the dial plate. When the index finger is opposite the division marked "shut," every door is locked. The dial plate and index finger could be dispensed with, and the sliding indicator, B, substituted, so that the poison cupboards could be placed in any other position in the counter, or adapted to any dispensing counter now in use. Some of the advantages are as follows:—Absolute security from accident; simplicity of action, cannot get out of order; no trouble in use; no keys required, therefore no inconvenience can arise from their loss. I must also add, that by a simple internal contrivance it is so arranged that no bottle after being in use can be placed in a wrong cupboard, although each bottle and each cupboard are of uniform shape and size. "DUPLEX."

All the designs have been sent to Liverpool for exhibition at the Conference, together with a model of Mr. Young's poison arrangement just described. We shall probably have some more to say about them next month. In the meanwhile we print the description of the Dispensing Counter sent in by Mr. E. Beynon, whose design, as will be seen from the report, was only one short of attaining the prize. His comments are so suggestive to all engaged in dispensing, that their production in these columns is amply justified, and a perusal of them will not be time wasted by any pharmaceutist. We may add that it is printed with Mr. Beynon's permission.

"This design is for a dispensing counter 7 feet long, 2 feet 2 inches wide, and 2 feet 10 inches high to top of counter. At one end, on the right hand, is a desk for writing labels and for copying prescriptions. In front of the desk is a nest of drawers for labels; little spaces, inclining inwards, are provided for those most frequently in use. There is a space at the top for prescription wrappers, and by the side of the drawers room for three or four books, such as the Pharmacopœia, Squire's 'Companion,' etc. The side of the desk fronting the counter is divided into shelves, slanting inwards, for the different sizes of wrapping-paper, powder-papers, etc. A place for string and for sealing-wax is also provided here. The gas-jet for sealing with proceeds from the corner formed by the desk; there is a drawer in the front of the desk for camel's-hair pencils, throat brushes, etc. At the other end of the counter is a small sink for washing measures, etc. The water-tap proceeds from the corner; if water is not laid on, the space behind this sink is to be used as a reservoir, but if there is a water supply such reservoir may be used for distilled water, if the dispensary is not otherwise supplied, and a second tap should proceed from the other corner of the sink. The waste water, if it cannot be carried off, may run into the rubbish-tub below. On the top of the counter is a drainer for measures, etc., and by the side hangs a cork-screw and thermometer. Under the sink is the plaster-drawer, divided into compartments for holding tin trays for the different plasters, each tray bearing the name of the plaster. Room for plaster knives is provided in the drawer below, which is divided also into compartments for small covered jars, the drawer below which again being for large covered jars. On the right hand of the sink are spaces, slightly receding from the front, for two 5-grain pill machines, (one being for strong smelling pills) one 3-grain pill machine, and one 1-grain machine. Each pill machine is made to project beyond the pill tray, and through this extended part a small bolt drops, below the level of the bottom of the tray, into a corresponding hole in the counter, which firmly fixes the machine, and prevents it from shifting when in use. There are also spaces for ointment slabs, and a space for a steel slab for drying pill-masses, etc., on; under this are two drawers, one for knives, the other for pill-rounders, pill trays, etc. The room behind this arrangement might also be made available for a water tank. Underneath are pigeon-holes for bottles, drawers being used for phials and small bottles; the lower pigeon-holes for large bottles are closed with doors falling open from the top; to the right of these bottles is a cupboard fitted with three shelves; at the bottom should rest the largest mortar, and the metal mortar, the shelf above being devoted to infusion jugs, and a couple of tin saucepans, etc.; and the next shelf above to mixture mortars, and one or two evaporating dishes. On the upper shelf should stand the smaller mortars and the glass mortar; the loop at the right hand corner is for holding a dusting-cloth. There would be room in this cupboard for a barrel for distilled water (if the other arrangements are not carried out) or for the syrup bottles. Next to the cupboard, succeeds a set of drawers, the top one being for corks, and suitably divided for them; by the side of this drawer hangs the cork-squeezer, which turns, up over the counter; below the cork drawer is one divided into several compartments, capping leather should be in the first one, the other divisions may be for pessary and suppository moulds, etc.; next, beneath, is a drawer for plaster leathers and chamois leathers; a tin containing some adhesive plaster on moleskin, for blisters, should also be kept here. Plaster leathers are to be kept in rolls, not folded up. Beneath the leather drawers are two more for small lotion and liniment bottles, and a cupboard below them for larger bottles of the same kind.

In the next lot of drawers, those under the desk, are some, suitably divided, for the different pills and powder boxes. Succeeding these is a drawer for stoppered bottles, and next to this a drawer for wide-mouth bottles, for powders, etc.; the bottom drawer is for herbs, used for making infusions, etc. It will be advisable to keep here weighed packets of herbs for making infusions and decoctions which are compound, that is, containing two or three ingredients. On the counter, by the desk, stand the paste-pot and board; the prescription stamp should also stand here. In front of where the dispenser would stand, is a small desk-shape box, on the lap of which are two little springs for holding prescriptions; in the body of the desk is a space for the dispensing scales. This space is so curved that the weights which rest here can be easily picked up; beyond this is a tray for strip-labels, such as the dispenser would affix immediately after he has prepared the prescription, as, 'Not to be taken,' 'Shake the bottle,' etc. There is also a place for ink and for very small weights, and underneath the tray room for metrical weights, etc. On the inner side of the lap of the desk are tables of the saturating powers of the different acids and alkalies, and also a table of the solubility of different salts. On the right of this scale-box, stands the distilled water-bottle, and on the left the different excipients for pills, etc. These when not wanted can be placed on one of the shelves below. A yard measure is fixed in the counter. The screen against which shelves are fixed is twenty inches in height. At the left-hand top corner is a small cupboard with a glass door for potent poisons, as Liq. Atropiæ, Liq. Strychniæ, Acid. Hydrocyan, etc., in contracted neck bottles. On the upper shelf, which recedes a little, stand similar solid poisons, all in ribbed bottles, the most deadly being in bottles of a different colour; on the small shelf below this cupboard stand poisons, in ribbed bottles, not so poisonous; below this, standing on a glazed slab or a sheet of glass resting on the counter, are placed the dilute acids. The upper shelf in the centre is for liquids, there being room for six pint bottles for liquids, such as Tr. Aurant., Tr. Cinchon. Co., Liq. Ammon. Acet., and others, which are used in some quantity, and for fifteen or sixteen 6-oz. bottles. On the counter rest the extracts and pill-mass jars, the division on the left-hand being for small jars for strong extracts, as Ext. Aconite, Ext. Bellad., and others, not used in any quantity. Over these jars, and fitting into the recess, is a swing gas stove, above which, sliding up and down the pipe conveying the gas, are two retort rings; when the smaller one only is required, the larger one may be dropped down on the stove. The shelf above the extract jars is for powder bottles, there being room for thirteen 6-oz. bottles. In front of the dispenser are ranged those powders most frequently used, as the Potash, Soda, and Ammonia Carbonates, etc. To the right of these, two shelves are made for small bottles of powders, not used in quantity, as Calomel, Jalapine. On the top of the screen, if there is not room elsewhere, either behind the dispenser or near at hand, may stand some bottles for different waters; these bottles should be of good glass, and finish with cut-glass stoppers, etc., so that they may be ornaments rather than otherwise. The labels on these bottles may be placed low down so that they may look more like show bottles. The following style of label is adapted throughout.

TR
CINCHONÆ
CO.

"No arrangement is shown in the design for lighting. The dispensary should be lit by a pendant if possible, or better by a sunlight; if neither can be done, standards, one at each end of the screen, look well.

"The counter may have a flat or projecting front according to its situation. The design given is for a projecting one, which might be more elaborate, according to circumstances. On the marble or mahogany top stands an aquarium for leeches, or not, as desired, and also show glasses containing rare or handsome chemicals. Below, in the projecting centre, is a cupboard for sponge, on each side of which are also cupboards for chemicals, etc., not much in demand."

POISONOUS COSMETICS.*

IN December last Dr. Lewis A. Sayre inclosed to Dr. Harris, Sanitary Superintendent of the Metropolitan District, a pamphlet, in which he described three cases of lead palsy produced by Laird's Bloom of Youth. This communication was laid before the Board of Health, together with notes from Dr. Harris and Sanitary Inspector Dr. Janes, in which attention was called to the great variety and large quantities of poisonous hair-dyes, commonly called hair restoratives, &c., consisting essentially of acetate of lead, and enamels consisting of carbonate of lead, which were sold in the Metropolitan District.

The Board at once directed the chemist, Dr. C. F. Chandler, to investigate the subject, and his report, which is here presented, fully confirms the opinions of the physicians. It was found, however, in the course of the investigation, that Laird's Bloom of Youth, the original cause of the investigation, no longer consisted of carbonate of lead, but was composed of oxide of zinc. As soon as this was established by the report, the proprietor, who had admitted to the writer that his preparation had formerly consisted of a lead compound, complained with an air of injured innocence, that the Board of Health had inflicted a great wrong upon him, had almost ruined his business. Articles have been inserted in the daily papers, in the interest of the Bloom of Youth, which reflect upon the chemist to the Board, as though he had wantonly, or by mistake, attacked an innocent citizen, and interfered with an honest business. We hold that inasmuch as the Bloom of Youth has been for years composed of carbonate of lead, and we know this of our own knowledge, as a bottle was purchased about two years ago, at a drug store on Broadway, and tested at the School of Mines, which had this composition, and as, according to Dr. Sayre and Dr. Hammond, this preparation had produced lead palsy, the proprietor of the article has no just claim for sympathy, even though he has finally, after so much harm has been done, changed its poisonous character.

In response to the resolution of the Board, directing "the chemist to examine the various hair tonics, washes, cosmetics and other toilet preparations in general use, and report what ingredients, if any, they contain of a character injurious or dangerous to those who use them," examined and reported upon various hair tonics, washes, and restoratives; lotions for the skin; enamels; white powders for the skin.

Sixteen were examined, and, with but one exception, all were found to contain lead, generally in the form of acetate or sugar of lead, which metal seems indeed to be the essential constituent in most cases. Most of the sediments observed in the bottles, and which require that the bottle "be well shaken," &c., consist of sulphur, which is intended shall ultimately unite with the lead, to produce the dark-coloured sulphide of lead, or, as one of the manufacturers has it, "the original youthful beauty and colour." The following tabular statement shows how the poisonous hair nostrums compare among themselves:—

GRAINS OF LEAD IN ONE FLUID OUNCE.

1. Clark's Distilled Restorative for the Hair ...	0·11
2. Chevalier's Life for the Hair	1·02
3. Circassian Hair Rejuvenator	2·71
4. Ayer's Hair Vigour	2·89

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* Condensed from the American supplement of the *Chemical News*.

5.	Prof. Wood's Hair Restorative	3·08
6.	Dr. J. J. O'Brien's Hair Restorer of America	3·28
7.	Gray's Celebrated Hair Restorative...	3·39
8.	Phalon's Vitalia	4·69
9.	Ring's Vegetable Ambrosia ...	5·00
10.	Mrs. S. A. Allen's World's Hair Restorer	5·57
11.	L. Knittel's Indian Hair Tonique ...	6·29
12.	Hall's Vegetable Sicilian Hair Renewer	7·13
13.	Dr. Tebbett's Physiological Hair Regenerator	7·44
14.	Martha Washington Hair Restorative	9·80
15.	Singer's Hair Restorative	16·39

With the exception of Perry's Moth and Freckle Lotion, lotions for the skin were found entirely free from lead or other injurious metals.

Seven enamels for the skin consist of white powders suspended in clear liquids; on standing the powders subside, but agitation quickly incorporates them with the liquids again. The following contain lead, mostly, if not entirely, in the form of carbonate; they are therefore simply "white lead" ground in water.

GRAINS OF LEAD IN ONE FLUID OUNCE, AFTER SHAKING.

Eugenie's Favourite ...	108·94 grains.
Phalon's Snow-White Enamel ...	146·28 "
Phalon's Snow-white Oriental Cream .	190·99 "

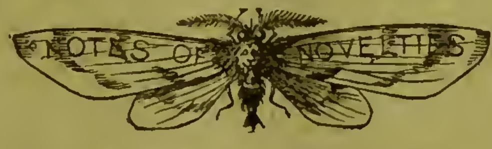
Seven white powders consist of carbonate of lime, carbonate of magnesia, clay, or "French chalk," either singly or mixed. Nothing injurious was detected in any one of them.

It appears, therefore, that the hair tonics, washes, and restoratives contain lead in considerable quantities; that they owe their action to this metal, and that they are consequently highly dangerous to the health of persons using them.

That with a single exception, Perry's Moth and Freckle Lotion, which contains corrosive sublimate, the lotions for the skin are free from lead and other injurious metals.

That the enamels are composed of either carbonate of lime, oxide of zinc, or carbonate of lead, suspendsd in water. The first two classes of enamels are comparatively harmless, as harmless as any other white dirt when plastered over the skin to close the pores and prevent its healthy action. On the other hand, the enamels composed of carbonate of lead are highly dangerous, and their use is very certain to produce disastrous results to those who patronize them.

The white powders for the skin are harmless, except in so far as their application may interfere with the healthy action of the skin.—*Scientific American.*



HERBERT'S WINDOW FASTENER.

MR. HERBERT, whose glue-pot has so quickly established itself in shops and households as a standard requirement, has just introduced an invention which is worthy of remark. The object is to prevent the rattling of windows during windy weather, or at any time, and this is most surely accomplished by this little device. A small disc of india-rubber is fixed against the window-frame by the aid of a tiny screw, and the sash pressing against this, the slightest noise is obviated, while there is nothing to obstruct the upward or downward motion of the sash. In a sick-room these will be invaluable. They are neatly mounted on cards, and are sold, retail, at threepence each.

SEA MOSS FARINE.

A NOVEL kind of food is being introduced into this country from America, which is likely to become very popular here. It is said to be prepared from Carrageen Moss, and the odour and flavour of it before being made into puddings, is exactly that of this old-fashioned and excellent weed. We certainly think there is something valuable in this article; very delicious blanc-manges, etc., may be made from it, and we look for it becoming a favourite with the doctor. The American firm which has taken it up is of the highest character, and we are informed it is largely sold in the United States.

MALTED EXTRACT BISCUITS.

THESE are made from the malt extract food noticed by us two months ago, the preparation of Messrs. R. H. Millard and Sons. These biscuits are very palatable, and we judge from what we know of the chemical constitution of their chief ingredients that they would be most excellent and nutritious for invalids and convalescents, particularly if taken with wine. To such, at least, they may be safely recommended.

PROCESS FOR ABSORBING GASES IN CHARCOAL.

A MR. WELTON, of Grafton-street, London, has taken out a patent for a process of his, to absorb gases in charcoal for medical administration. We are favoured with samples of oxygenated and carbonated charcoal. Whether the admixture of the gases in this form is of any real use, fortunately we are not called upon to decide. The inventor claims for his preparation wonderful powers in producing an appetite.

LABORATORY WORK.*

PROFESSOR CHURCH'S work, as its title would imply, is intended especially for use in the Laboratory, and as stated in the preface, differs somewhat in its arrangement from similar manuals.

Excellent directions are given for the due observance of cleanliness, order, and exactness, not only in carrying out, but also in noting the results of experiments, and some advice, perhaps not unnecessary to the younger students, as to the necessity of quietness in the laboratory. So far good; but this class of directions seems a little overstrained when our author proceeds to caution chemical students, who are usually supposed to be well educated, as to the accuracy of their spelling.

A particular feature to be noticed in the directions given for manipulation, is the extreme minuteness of detail with which they have been drawn out; for instance, in the lesson on Crystallization, we have these directions:—

"*Apparatus required.*—Furnace-support, wire-gauze, spirit-lamp, wash-bottle, two porcelain basins, porcelain crucible, triangle, test-tubes, scales and weights, filter-papers, piece of wire.

"*Special Materials and Tests.*—Solutions of copper sulphate, sodium sulphate, and calcium chloride."

In fact, the directions include the most trifling article required for the matter in hand; and the same praiseworthy attention to detail is continued throughout the whole of the lessons on manipulation.

The book being as the title-page informs us, "specially arranged for Agricultural Students," lessons on the Manufacture of Superphosphate, Lime in Soils, Experiments with Milk, Starch and Sugar, Soils, Testing of Waters, Bread, and other matters relating more or less to Agriculture, are included in the part of the book relating to manipulation, instead of being placed, as is common in chemical manuals, in that part on Qualitative Analysis.

To make up for this introduction, however, Mr. Church does not in the part headed Qualitative Analysis, include any instructions for the examination of any particular substances, but confines himself to general results. A short but comprehensive description is given of the principal elements, the mode of classification being, first into Metals and Acid elements, or non metals, these two divisions being afterwards divided into Monads, Dyads, Triads and Tetrads. With regard to the non-metals, the terms univinculant, bivinculant, &c., are also employed. A complete table of elements with their atomic weights and symbols is given, but only the more important are treated of in the book.

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* The Laboratory Guide: A Manual of Practical Chemistry for Colleges and Schools, specially arranged for Agricultural Students. By ARTHUR H. CHURCH, M.A. John Van Voorst, 1870. Second Edition.

A very excellent description of the various reagents and tests naturally precedes the chapter on reactions, which is one of the shortest and clearest we remember to have seen on this subject; it first treats of the separation into groups, and afterwards of the special tests for each metal or acid radicle, these being given simply and clearly.

The method of proceeding for the analysis of substances containing more than one metal and one acid radicle is next treated of, this part including the preliminary examination of substances and the preparation of solutions.

In giving the various schemes for the analysis of the different groups of precipitates, Mr. Church has adopted the somewhat novel method of heading the groups of metals as chlorides, sulphides insoluble and soluble in acids, carbonates insoluble in water, and carbonates soluble in ammoniacal salts or water, thus designating the groups by the general condition in which they exist after precipitation or reaction; a proceeding which he does not follow out in treating of the acid radicles, simply, we presume, because he would have found it difficult to do so. These schemes, however, are clear and comprehensive—that is, so far as concerns the metals and acid radicles they are intended to include.

Schemes are also given for the examination of substances insoluble in acids and of alloys. A very useful table of solubilities is appended.

In treating of quantitative analysis, the author, bearing in mind his especial intention of arranging the book for the use of agricultural students, has omitted the usual methods of estimation of simple substances, except those connected directly with agriculture—viz., lime, magnesia, baryta, phosphorus pentoxide, and potash. He then, after giving directions for the preparation of standard acid and alkali solutions, proceeds at once to the complete analysis of various substances more or less used in agriculture—such as bone, bone-ash, apatite, manures in general, soils, cattle foods, water, milk, and cheese.

Amongst others is a very good method for the examination of super-phosphates, which, according to the author, is a modification of that used in the Laboratory at Rothamsted; it is, however, too long for extraction.

Altogether, we think that both agricultural and laboratory students and chemical teachers may thank Professor Church for a very useful and valuable little manual. We are almost sorry, however, that more space could not have been devoted to substances less connected with agricultural matters; but this not being the author's intention, we can only heartily recommend the book to the attention of chemical teachers and students, and especially to those who intend to follow agricultural pursuits. H. M.

SNUFF-TAKING.*

It is a well-observed fact that we never know the value of a friend until we have lost him, and then, perhaps, we are disposed to over-estimate his virtues. True, Mark Antony tells us that "the evil that men do lives after them, the good too often is interred with their bones;" but we should be disposed to argue with him on this point. Now that snuff-takers have become curiosities, there arises a champion for the dirty, dying habit, in Dr. Murray, of Newcastle, and a very able champion he is too. We should not have thought that so much good could have been said of the practice as he has got together in a small and most pleasantly-written pamphlet. First of all it affords just the right amount of natural excitement which our nervous system requires. But this is only introductory; chapter two brings out, in the blackest of type, Dr. Murray's serious assertion that "an habitual snuffer seldom, I had almost said never, dies of consumption." After the most industrious inquiries, our author has only been able to discover one instance where this rule has not been confirmed, and in this case he remarks, "circumstances were against the patient." It must be admitted that some very remarkable facts and figures are brought forward, and if only for its snuff memorabilia, the little *brochure* is well worth reading. The doctor is himself an ardent lover of the habit on which he bestows so many laudatory adjectives; and he does not disguise from himself, or his readers, that on this account he is, perhaps, too prone to favour his old friend. The genial spirit which is evident through these pages, shows that he, at least, enjoys good health, whether in consequence, or in spite of, snuff-taking, we will not undertake to say. Consumption, we should add, is not the only disease preventible by this indulgence. Fevers, cholera, apoplexy, paralysis, and a few other trifles, might also be disposed of, if we would only return to the manners of our grandfathers. In one sentence it is estimated that 40,000 lives per annum are lost in England and Wales, consequent upon the disuse of snuff since the days when George IV. was king. We must not omit to add that Dr. Murray gives some scientific grounds for his theory, as well as the lighter kind of gossip, whereby he has made his book interesting. A book on tobacco, by the same author, is in the press, and we wait with anxiety to learn what good thing the "dusty god" has left to be accomplished by the still more fascinating idol.

THE SCIENCE OF MEDICINE.*

In stern contrast with the gay little book we have just noticed, we have a thoughtful and carefully-written pamphlet from Dr. Black, on "Therapeutics and Disease." The writer is evidently impressed with the wretchedly unsatisfactory condition of the science of medicine as it is presented at the present day. There is no dearth of new remedies, but there is no stability in the proposed methods of cure, and it is with but very unequal steps that the science of therapeutics follows "the rapid advances made in the pathology and diagnosis of disease." Professor Huxley has compared the practice of medicine to a man fighting an active foe in a dark room, and though it must be acknowledged that there is a mystery in disease scarcely less than the mystery of life itself, both of which seem placed beyond the limits of our attainments, it is nevertheless discouraging that while physiology and anatomy have become so accurately understood, the action of specific remedies is still so empirical. Dr. Black writes :—

"To too great an extent the 'science of medicine' it must be admitted, is a chaos of isolated particulars false and true. Of remedies we have thousands; of diseases truly more than a sufficiency; and of opinions, their name is legion; while individual vanity and fancy find scope in making daily accessions to their number, and rendering confusion worse confounded. Surely then it were well that we pause, and deliberate whether these isolated and incoherent particulars do not admit of generalisation—whether in the maze of accumulated experience a few fundamental axioms may not be discovered; and whether, guided thus, confusion and discord may not be dispelled, and give place to harmony and order; whether the proverbial reproach of our differences may not be affiliated on the past, and our observations in due time be reconciled to reasonable and inflexible laws."

There is a great deal of hard reading in this pamphlet, and we shall not attempt to do justice to the author in tracing his observations throughout. His endeavour is to indicate certain conditions of the system which give as it were distinct opportunities for the attack of certain diseases, and then to show how remedies which will cure these diseases do so by restoring the system to its properly balanced state. We are compelled to place Dr. Black's classification thus vaguely, for there is too much in it to pretend to analyse it throughout. We note its publication chiefly, however, as evidence that there are physicians who are willing to look in the face of the uncertainty which now everywhere meets us in medical treatment.

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* Snuff-Taking; its Utility in preventing Bronchitis, Consumption, etc. By John C. Murray, M.D., F.A.S.L. London: Churchill.

* Observations on Therapeutics and Disease. By Donald Campbell Black, M.D., &c. London: Churchill.

Corner for Students.

CONDUCTED BY RICHARD J. MOSS.

The chemical formulæ employed in this section are based upon the new system of atomic weights, unless the use of the older system is specially indicated. In the *British Pharmacopœia* the symbols corresponding to those adopted here are printed in heavy Clarendon type. The new editions of Fownes's *Manual of Chemistry*, and Attfield's *Chemistry: General, Medical, and Pharmaceutical,* supply the data required for calculations, and are recommended as text-books.

QUESTIONS.

First Division.

I. Quantitative Analysis.—In the analysis of a sample of kelp, a solution containing iodine, bromine, and chlorine, in combination with an alkali metal, is divided into three equal portions, which are treated as follows:—

a. Silver nitrate is added in excess; the solution is then slightly acidulated with nitric acid, and the precipitate collected, washed, and dried. After ignition, it is found to weigh 1·557 grm.

b. The iodine is expelled from this portion by the addition of bromine water; the mixture is evaporated to dryness, and the dry residue, free from hydrobromic acid, is dissolved in water. This solution is treated in the same manner as *a*. The precipitate weighs 1·469 grm.

c. Strong chlorine water is added to this portion to expel the iodine and bromine. The solution is then evaporated to dryness; the dry residue is dissolved in water, and subjected to the same treatment as the *a* portion. The precipitate in this case weighs 1·220 grm.

From these data, calculate the quantity of iodine, bromine, and chlorine, in the original solution.

II. Chemical Toxicology.—Describe a process for the examination of the contents of a stomach in a case of suspected poisoning by oxalic acid.

III. Tannic Acid.—Name the different officinal substances which owe their astringent properties to tannic acid.

IV. Hydrofluoric Acid.—Give a short account of the principal properties of this acid. How are fluorides detected in compounds not decomposable by sulphuric acid?

V. Specific Gravity.—Find the specific gravity of a mixture consisting of five parts by weight of gold, and three of silver (sp. gr. of gold 19·35, silver 10·51).

Second Division.

I. Cerii Oxalas, *B.P.*—Explain the officinal tests for the purity of this substance, and state what impurities they are intended to detect.

II. Hydrargyri Iodidum Rubrum, *B.P.*—Calculate the weight in ounces of the mercuric iodide produced by the officinal process for the preparation of this substance.

III. Thermometers.—Give a short account of the principal thermometric scales in use, and show how the degrees of each are converted into those of the centigrade scale.

IV. Gas Volume.—A litre of hydrogen at 0° C. and 760 m.m. pressure weighs ·08961 of a gramme, what should a litre weigh at 25° C.?

V. Specific Gravity.—A piece of metal weighs 14 grms. *in vacuo*, 12·15 grms. in water, and 11·72 grms. in a solution of potassium sulphate. Find the sp. gr. of the solution.

ANSWERS.

First Division.

I. Organic Analysis.—There was 7·846 per cent. of nitrogen in the compound. The 20 cubic centimetres of sulphuric acid solution, through which the evolved ammonia is passed, contain ·4 of a gramme of sulphuric acid ($H_2SO_4=98$), for the neutralization of which ·32653 of a gramme of sodium hydrate would be required, according to the following proportion, the weight of two molecules of the latter substance being 80—

$$98 : \cdot 4 = 80 : 30 \therefore x = \cdot 32653.$$

But the actual quantity of sodium hydrate employed was ·164 of a gramme (16·4 c.c. of a solution containing 1 gramme in every 100 c.c.), consequently the neutralization effected by the ammonia is equivalent to (·32653 — ·164 =) ·16253 of a gramme of sodium hydrate, one molecule of which corresponds with one molecule of ammonia containing one atom of nitrogen (14); therefore the quantity of nitrogen in the ammonia absorbed by the acid solution is found by the proportion—

$$40 : \cdot 16253 = 14 : x \therefore x = \cdot 0568855.$$

Then to find the percentage we have the proportion—

$$\cdot 725 : 100 = \cdot 0568855 : x \therefore x = 7 \cdot 846.$$

II. Chemical Toxicology.—The following method for the detection of strychnine in organic mixtures is recommended by Rodgers and Girdwood, who have detected by it ·03 mgrm. of the alkaloid. Digest the mixture with dilute hydrochloric acid, and filter. Evaporate the filtrate on the water-bath to dryness, extract the residue with spirit of wine, evaporate the solution, treat the residue with water, and filter. Supersaturate the filtrate with ammonia; add 10 c.c. of chloroform, and shake. Transfer the chloroform to a dish with a pipette, evaporate on the water-bath, moisten the residue with strong sulphuric acid to carbonize the foreign organic substances, treat with water after the lapse of several hours, and filter. Supersaturate the filtrate again with ammonia, and shake it with about 3 c.c. of chloroform. Repeat the same operation, until the residue left on evaporation of the chloroform is no longer blackened by sulphuric acid. Finally, transfer the pure chloroform solution, drop by drop, by means of a capillary tube, to the same spot on a heated porcelain dish, letting it evaporate; then dissolve the residue in a drop or two of strong sulphuric acid (free from nitrous acid), and add a small quantity of solid potassium chromate. If strychnine is present, the mixture will acquire a fine bluish-violet colour when stirred with a glass rod; this colour subsequently changes to wine-red, then to reddish-yellow.

Brucine is easily distinguished from strychnine by its ready solubility both in dilute and absolute alcohol, and by its behaviour with concentrated nitric acid, which dissolves brucine, giving a solution of an intensely red colour; when heated this colour changes to yellow, and if stannic chloride or ammonium sulphide be added, the colour changes to an intense violet. A solution of strychnine in cold nitric acid is colourless, and becomes slightly yellow when heated.

III. Sodæ Phosphas, B.P.—According to the officinal process, bone ash—which consists principally of calcium phosphate mixed with about 10 per cent. of calcium carbonate—is treated with sulphuric acid, by which the insoluble phosphate is converted into a soluble acid phosphate and calcium sulphate; the calcium carbonate is converted into sulphate, thus:—

$$3\,(Ca_3 2PO_4) + CaCO_3 + 7\,H_2SO_4 = 3\,(CaH_4 2PO_4) + 7\,CaSO_4 + H_2O + CO_2.$$

The calcium sulphate is removed by filtration, and sodium carbonate is added to the filtrate until it ceases to produce a precipitate, and the solution is feebly alkaline. By this treatment a portion of the acid phosphate assumes its original insoluble form, constituting the precipitate, while the remainder of it yields sodium phosphate, which remains in solution. The precipitate is removed by filtration, and the sodium phosphate is obtained in crystals by evaporating the filtrate. The following equation represents the reaction:—

$$3\,(CaH_4 2PO_4) + 4\,Na_2CO_3 = 4\,(Na_2HPO_4) + 4\,H_2O + 4\,CO_2 + (Ca_3 2\,PO_4).$$

IV. Silicic Acid.—Silicic acid, or orthosilicic acid (H_4SiO_4), is obtained in the form of a gelatinous mass by passing silicium fluoride through water, or by passing carbon dioxide into a solution of a soluble silicate. It is nearly insoluble in water and acids; but if a dilute solution of an alkaline silicate be poured into a considerable excess of hydrochloric acid, silicic acid remains in solution, but is precipitated on neutralizing the solution with an alkali. By means of dialysis, the hydrochloric acid and alkaline chloride can be separated from the solution of silicic acid, which is left in a state of purity, and by concentration, a solution containing 14 per cent. of acid may be obtained. This solution is tasteless, colourless, and feebly acid to test-paper; in a short time it becomes converted into a transparent jelly-like mass, which, if dried over sulphuric acid, loses a molecule of water, and leaves an acid having the formula H_2SiO_3. By igniting either this substance or the jelly-like mass, silicic anhydride (SiO_2) is obtained as a gritty white powder. At common temperatures the silicic acids are weak, but at a red heat they expel sulphuric acid and the more volatile acids from their salts. The silicates are very numerous, constituting the greater part of the mineral kingdom. They vary considerably in composition, some corresponding with the acid H_4SiO_4, as, for example, Mg_2SiO_4; others, such as Na_2SiO_3, correspond with the acid H_2SiO_3. The only silicates soluble in water are those of the alkali metals; their solutions are alkaline to test-paper. These salts in solution are decomposed by all acids, and give a gelatinous precipitate with ammonium chloride. Some of the silicates insoluble in water are dissolved with decomposition by hydrochloric acid or nitric acid; some that are not decomposed by these acids are decomposed by concentrated sulphuric acid. The silicates that are not acted upon by any acids but hydrofluoric acid, are decomposed by fusion with the alkaline carbonates, and also with barium hydrate. The decomposition of these silicates is best effected by reducing them to the finest powder, mixing this intimately with a mixture of potassium and sodium carbonates, and fusing the mixture in a platinum crucible until the evolution of carbon dioxide ceases. By this means a soluble alkaline silicate is obtained.

V. SPECIFIC GRAVITY.—The gold and copper should be mixed in the proportion of 89·739 by weight of the former to 10·261 of the latter in every 100 parts.

Let W represent the weight of the mixture, S its specific gravity, and V its volume; and let w', w''; s', s''; and v', v''; represent the weight, specific gravity, and volume, respectively, of each of its constituents: then,

$$\begin{array}{ll} \text{since} & w'+w''=W \\ \text{or} & v's'+v''s''=VS \\ \text{or} & v's'+(V-v')\,s''=VS \\ \text{we get} & v'\,(s'-s'')=V\,(S-s'') \end{array}$$

In this equation we substitute $\frac{w'}{s'}$ for v', and $\frac{W}{S}$ for V, and we get $\frac{w'}{s'}\;(s'-s'') = \frac{W}{S}\;(S-s'')$; whence solving for w' we get $w'=W\left(\frac{S-s''}{s'-s''}\right)\frac{s'}{S}$

Considering w' to represent the required weight of gold, and substituting the specific gravities of the mixture, gold, and copper, given in the question for S, s', and s'' respectively, in the above formula, we have—

$$w'=100\;\left(\frac{17{\cdot}25-8{\cdot}85}{19{\cdot}35-8{\cdot}85}\right)\frac{19{\cdot}35}{17{\cdot}25}\;\therefore w'=89{\cdot}739,$$

$$\text{and } w''=(100-89{\cdot}739=)\;10{\cdot}261.$$

Second Division.

I. CALCII CHLORIDUM, *B.P.*—Native calcium carbonate, such as marble or chalk, usually contains iron or magnesium carbonates. In preparing calcium chloride from the carbonate, it is necessary that these impurities should be removed; for this purpose it is directed in the Pharmacopœia that a little solution of chlorinated lime, and some slaked lime, be added to the solution of impure calcium chloride; by this means the iron and magnesium are precipitated as hydrates, and subsequently removed by filtration. The reactions may be represented thus:—

$$FeCO_3 + MgCO_3 + 4HCl = FeCl_2 + MgCl_2 + 2H_2O + 2CO_2,$$

$$4FeCl_2 + MgCl_2 + Ca\,2ClO + 5CaH_2O_2 + 2H_2O = 2\,(Fe\,6HO) + MgH_2O_2 + 6CaCl_2.$$

II. POTASSII BROMIDUM, *B.P.*—Upon the addition of bromine to a solution of potassium hydrate, potassium bromide, and bromate are formed thus:—

$$6KHO + 3Br_2 = 5KBr + KBrO_3 + 3H_2O.$$

By heating the mixed salts with charcoal, the bromate is deprived of all its oxygen, while the bromide remains unaltered, thus:—

$$2KBrO_3 + 3C_2 = 2KBr + 6CO.$$

This decomposition might be effected without employing charcoal; but greater heat would be required, and more time occupied.

III. SULPHUR.—The influence of different degrees of heat on sulphur is very remarkable. It melts at about 111° C.; at this temperature it is of the colour of amber, and thin and fluid as water; when further heated it begins to thicken and to acquire a deeper colour; and between 221° and 249° it is so tenacious that the vessel in which it is contained may be inverted for a moment without the loss of its contents. If in this state it be poured into water, it retains for many hours a remarkably soft and flexible condition, which should be looked upon as the amorphous state of sulphur. After a while it again becomes brittle and crystalline. At about 340° it regains its fluidity in part, though it is still dark-coloured, and finally at about 440° it begins to boil, and is converted into an amber-coloured vapour, having a sp. gr. of 32 (hydrogen = 1); this vapour condensed constitutes the flowers of sulphur of commerce.

IV. GAS VOLUME.—A litre of oxygen at 0°C. and 743 m.m. pressure weighs 1·39829 gramme. The density of a gas is directly as the pressure and inversely as the volume, therefore if a litre of hydrogen weighs 1·43028 gramme at 760 m.m. pressure, to find its weight at 743 m.m., we have the proportion:—

$$760 : 743 = 1{\cdot}43028 : x \;\therefore\; x = 1{\cdot}39829.$$

V. SPECIFIC GRAVITY.—The piece of quartz contains 7·776 ounces of gold, according to the following formula:—

$$11{\cdot}5\,\frac{(\;6{\cdot}27 - 2{\cdot}6)\;19{\cdot}35}{(19{\cdot}35 - 2{\cdot}6)\;\;6{\cdot}27}$$

The explanation of this formula will be found in the answer to question V. of the First Division.

PRIZES.

The First Prize for the best answers to the questions of the First Division printed in our August number has been awarded to

JOSEPH WATTS, jun. (J.W.), Attercliffe, Sheffield,

to whom two Second Prizes have already been awarded.

The Second Prize for the best answers to the questions of the Second Division has been awarded to

WILLIAM LAUGHER, West Bromwich.

Marks awarded for Answers.

First Division.

	I.	II.	III.	IV.	V.	E.	Total.
J. W. (*1st prize*)	7	8	5	7	5	3	35
J. Young	7	7	5	6	5	3	33
N. Coaker	7	7	5	5	5	3	32
B. P.	4	8	5	6	5	3	31
J. W. Smith	7	4	3	6	5	3	28
Otho	3	8	5	6	0	3	25
A. Fraser	7	7	5	2	0	3	24
J. H. Watson	6	7	3	5	0	3	24
J. S. E.	4	7	3	2	0	3	19
G. J. H.	1	2	2	1	0	1	7

Second Division.

	I.	II.	III.	IV.	V.	E.	Total.
W. Laugher (*2nd prize*) ..	5	5	5	3	6	3	27
J. G. A.	5	6	6	4	0	3	24
Spes	5	5	5	4	2	3	24
J. H. Elmitt	5	5	5	4	0	3	22
S. T. Severs	4	5	4	2	5	1	21
J. C. Treadgold	5	5	4	4	0	3	21
A. Weddell	5	4	5	4	0	2	20
J. R. D.	5	5	5	3	0	2	20
T. G.	5	5	4	4	0	2	20
C. B. L.	5	5	4	0	0	2	16
Limax	1	4	4	4	0	2	15
W. J. Croghan	0	1	5	4	0	2	12
U. H.	0	0	2	3	0	1	6

TO CORRESPONDENTS.

⁂ All questions forwarded to us for publication in this "Corner for Students" should be accompanied by the answers which the propounders believe to be correct. Communications should include the names and addresses of the writers; those which reach us after the first day of the month will be disregarded.

Prizes.—The students to whom prizes are awarded are requested to write at once to the publisher naming the book they select, and stating how they wish it forwarded.

B. P.—I. Your solution was correct, with the exception of the percentage calculation.

J. W. Smith.—II. The process which you suggest would not entirely separate the organic matter, consequently the results of the tests would not be reliable. III. The precipitate produced by the addition of sodium carbonate consists of insoluble calcium phosphate (Ca_32PO_4).

Otho.—I. You associated a similar question in the previous month with this one.

A. Fraser.—IV. You make no distinction between silicic acid and silicic anhydride.

J. H. Watson.—The formula which you employed to prove the accuracy of your result was the converse of that by which the result was obtained, and thus the agreement. The relative volumes of substances are ascertained by dividing their actual weights by their relative weights or specific gravities. Now, the weight of gold in 100 parts of the alloy is 84·717; this divided by 19·35 gives 4·378; the relative volume of the copper is (15·283÷8·85=) 1·725. The sum of these numbers is the volume of the mixture, viz. 6·105, then 100÷6·105=16·38, the sp. gr. of the alloy.

G. J. H.—We do not require full details of calculations; you may take our printed answers as examples.

J. G. A.—Your answers were very good, with one exception. You will find the formula by which this problem is solved fully explained in the answer to Question V. of the First Division.

S. T. Severs.—IV. V. You should show how your results are obtained.

A. Weddell.—II. In the second reaction, the ultimate gaseous product, carbon dioxide, takes half of its oxygen from the atmosphere; so that it is only carbon monoxide that results from the deoxidation of the potassium bromate.

Limax.—I. The iron in this instance exists in solution as chloride, your equation represents it in a metallic condition, which, of course, is impossible. It is precipitated as hydrate.

W. J. Croghan.—I. Calcium chloride is highly soluble in water, and is, therefore, not precipitated. II. Formula for potassium bromate incorrect.

John Smiles, Bournemouth.—Your answers arrived too late for the competition. See the conditions.

Books offered as First Prizes.

Attfield's *Chemistry: General, Medical, and Pharmaceutical.* (Van Voorst.)
Brooke's *Elements of Natural Philosophy* (Churchill.)
Conington's *Handbook of Chemical Analysis;* with Tables of Qualitative Analysis adapted to the same. (Longmans.)
Eliot and Storer's *Manual of Inorganic Chemistry.* (Van Voorst.)
Fownes's *Manual of Elementary Chemistry.* (Churchill.)
Fresenius's *Qualitative Analysis.* (Churchill.)
Galloway's *Qualitative Analysis.* (Churchill.)
Ganot and Atkinson's *Elementary Treatise on Physics.* (Longmans.)
Garrod's *Materia Medica;* with Modern Chemical Notation. (Walton.)
Noad's *Chemical Analysis, Qualitative* and *Quantitative.* (Reeve.)
Northcote and Church's *Qualitative Analysis.* (Van Voorst.)
Odling's *Outlines of Chemistry.* (Longmans.)
Royle and Headland's *Materia Medica.* (Churchill.)
Williamson's *Chemistry for Students.* (Clarendon Press.)
Barff's *Introduction to Scientific Chemistry.* (Groombridge).
[Any other scientific book that is published at a price not greatly exceeding half-a-guinea may be taken as a first prize.]

Books offered as Second Prizes.

Bloxam's *Laboratory Teaching.* (Churchill.)
Church's *Guide for Students in Agricultural Chemistry.* (Van Voorst.)
Galloway's *First Step in Chemistry.* (Churchill.)
Gill's *Chemistry for Schools.* (Walton.)
Hofmann's *Introduction to Modern Chemistry.* (Walton.)
Huxley's *Lessons in Elementary Physiology.* (Macmillan.)
Oliver's *Lessons in Elementary Botany.* (Macmillan.)
Orme's *Introduction to the Science of Heat.* (Groombridge.)
Potts's *Elements of Euclid.* School Edition. (Longmans.)
Roscoe's *Lessons in Elementary Chemistry.* (Macmillan.)
Wormell's *Elementary Course of Mechanics.* (Groombridge.)
Wurtz's *History of Chemical Theory.* Translated by Watts. (Macmillan).
[Any other scientific book which is sold for about five shillings may be taken as a second prize.]

THE MONTH

THE LONDON CHEMISTS' ASSOCIATION.

THURSDAY, JUNE 16.

ON the conclusion of Mr. Bell's paper on the "Syrups of the British Pharmacopœia," the following discussion took place:—

The Chairman, Mr. **Beedzler**, said he considered that the value of sugar, as a preservative agent, was scarcely appreciated to the extent it deserved; many more syrups might be added to the Pharmacopœia with advantage.

The active principles of many herbs were preserved better by sugar than by spirit, or a mixture of spirit and water.

Emetina, for instance, was soon deposited from the Vin. Ipecac., however carefully it was made; but such was not the case with a syrup prepared from an infusion of the drug. Mr. Weaver, in his paper on the "Medicinal Wines," had clearly shown the superiority of the syrup to the wine of ipecacuanha—at any rate, as an expectorant, if not as an emetic. He (Mr. Beedzler) believed that a rather strong syrup of colchicum would be a good preparation. He remarked that in several of the fluid extracts of the United States' Pharmacopœia, sugar was added to preserve them instead of spirit. He differed from Mr. Bell with regard to not increasing the number of flavouring syrups; he thought others might advantageously be added. With regard to Syr. Ferri Phosph., he had been accustomed to prepare it from a liquor made with syrupy phosphoric acid. He would like to see other syrups of the phosphates added.

The Secretary, Mr. **Beynon**, then read a communication from Mr. Styles, of Doncaster, corresponding member, on Syr. Ferri Phosph., in which he pointed out the fact that in the P. B. process, all the phosphate of iron was not precipitated, much being left behind in the filtrate.

Mr. **Groves** had suggested that a greater quantity of the ingredients should be used to obtained a syrup of the required strength. Remembering that calcium phosphate was precipitated by ammonia, he tried the same agent with iron, and found it answer perfectly, for not the slightest trace of iron could be detected in the filtrate. The following process was the one he adopted; he considered it better to prepare the syrup from a liquor:—

Take of
Sulphate of iron, 224 grs.
Phosphate of soda, 200 grs.
Solution of ammonia a sufficiency.
Diluted phosphoric acid, 5½ fl. oz.
Syrup, 9 fl. oz.

Powder the salts, mix them, and pour upon them 2 fl. oz. of boiling distilled water, stirring carefully; then add solution of ammonia with repeated stirring, until the mixture smells slightly ammoniacal. Wash the precipitate with distilled water, first by decantation, afterwards on a filter, until the filtrate ceases to be affected by chloride of barium. Then press the washed precipitate strongly in a fold of calico, and having evaporated the dilute phosphoric acid to 2 fl. oz., dissolve the precipitate in it; filter the solution, and add distilled water until it measures exactly 3 fl. oz. Each fluid drachm will then contain gr. iv. of phosphate of iron ($Fe_3P_2O_8$), and when added to 3 fl. drs. of syrup, will form Syr. Ferri Phosph. P.B.

Mr. **Walker**, corresponding member, also contributed some notes, in which he said that he could not get a satisfactory Syr. Limonis unless perfectly fresh lemon-juice was used, and then care should be taken to have as little mucilaginous matter present as possible. He thought the Pharmacopœia should have ordered the peel to be cut very thin, as in the tincture. He also said he had prepared a Syrupus Rhœados by percolation of the dried petals, with a very satisfactory result.

Mr. **Taubman** said that, in making Syr. Senna, he found it better to add the oil of coriander, dissolved in the spirit *after* the syrup had been made, not *before*, as the Pharmacopœia directed.

A vote of thanks to Mr. Bell and to the Chairman terminated the meeting.

THURSDAY, JUNE 30.

Mr. **Weaver** in the chair, Mr. **Parsons** read a paper on the "Mucilages and Mixtures of the Pharmacopœia."

He said the British Pharmacopœia contained three mucilages and eleven mixtures. The former, which he dealt with first, were, he said, used more as vehicles than remedies. They served to suspend insoluble powders in mixtures, and to render oils and resinous tinctures more miscible with water.

Mucilage Acaciæ. The mode of preparing this simple thing was different in every Pharmacopœia. The gum was a long time before it dissolved. The best method of making it was according to the directions of the P. B. 1864, which ordered the gum to be suspended in a muslin bag; the end of the bag should be about two or three inches below the surface of the water. Another plan was to make it in a wide-mouthed bottle, laying it on its side, and occasionally rolling it over. Mr. Parsons also laid considerable stress on the advisability of using fresh mucilage for making emulsions.

Mucilage Amyli was just noticed.

Mucilago Tragacantha, he said, was rather troublesome to make, requiring a long time for the complete diffusion of the gum, and then, after all, soon spoiled. The 1864 Pharmacopœia ordered unpowdered gum and boiling water to be used. He supposed the next Pharmacopœia would order spirit to be used in the way that had lately been suggested. The proper way was to moisten the powder with spirit in a large bottle, and pour on the water *without* agitation until the whole had been added, then to shake the bottle suddenly and vigorously. When powdered tragacanth was ordered in a mixture in conjunction with a tincture, this method could easily be employed.

Mr. PARSONS next proceeded to notice the "Mixtures of the Pharmacopœia."

Mistura Ammoniaci.—Ammoniacum, he said, was a gum-resin allied to assafœtida and galbanum, but it contained much less—in fact, scarcely any—volatile oil, but had a small percentage of glutinous matter, insoluble in either water or alcohol. With regard to the mixture, the gum, when dissolved in water, kept the resinous portion suspended.

Mist. Amygdalæ.—This was now made from a compound powder, not from a confection, as in the days of the P.L., though the latter work advised that the confection should be kept in powder. In the process of trituration, the fixed oil in the almonds was emulsified with the gum, and also the principal emulsin, the soluble constituents being also taken up by the water, leaving only a little pulpy matter, consisting of woody fibre, to be strained out. Emulsin, Mr. Parsons observed, was precipitated by alcohol in the form of a thick white floculent matter; heated to 212° Fahr., it coagulated and assumed a starchy appearance.

Mist. Creasoti was introduced from the Edinburgh Pharmacopœia. The acetic acid was added to render the creasote more soluble, but was not needed. The spirit of juniper was added to disguise the taste of the creasote, but he thought the quantity was hardly sufficient. The Edinburgh form, indeed, contained more.

Mist. Cretæ was next noticed. The form was different from that of the P.L., in that it ordered powdered acacia instead of mucilage, and syrup in the place of sugar. It was an inelegant mixture, though a useful one: the quantity of gum was not sufficient to suspend the chalk, and after standing some time, it required violent agitation to diffuse the sediment in order to get an uniform dose. He did not see why sugar should not have been ordered instead of syrup, for it was a great convenience to keep the ingredients ready mixed.

Mist. Ferri Aromat. was an introduction from the Dublin Pharmacopœia, and, as Mr. Squire stated in his "Companion," was not a popular medicine. The very small quantity of iron originally taken up was soon deposited. It was altogether an unsatisfactory preparation, and he hoped in a future edition of the Pharmacopœia it would be omitted.

The favourite Mist. Ferri Co., sometimes known as "Griffith's Mixture," was next noticed. Mr. Parsons considered that the present form could not be improved upon.

Mist. Gentianæ, the Scotch preparation, was a nuisance to English dispensers. Physicians frequently confused it with the Mist. Gentianæ Comp. of the P.L., which contained senna, etc.

Mist. Guaiaci, Mr. Parsons did not say much about; it was certainly not an elegant mixture.

With regard to Mist. Scammonii, he said it was a very convenient way of administering scammony; the milk quite covered its taste.

Mist. Sennæ Co., he thought, scarcely contained sufficient sulphate of magnesia; the proportion was one in five; he thought one in three or four would have been better. In preparing this mixture, care should be taken to use perfectly fresh infusion of senna, and only a very gentle heat should be employed to dissolve the extract of liquorice and the salts.

Mist. Spiritus Vini Gallici was not often prescribed, but he had no doubt in some cases it proved very useful; at any rate, it was the most palatable mixture in the Pharmacopœia.

The Chairman, Mr. WEAVER, in the course of some practical remarks, observed that mucilage acacia, kept in a bottle well corked, became acid sooner than if exposed to the air; and under any circumstances, after it had been made four or five days, was unfit for most medicinal purposes. He thought that a Mist. Amygd. Amara would be a useful addition, suitable as a vehicle for preparations of bismuth and lithia. With respect to Mist. Gent. Co., he thought it was not all needed, seeing that we had both an infusion and a tincture; but probably it was inserted to satisfy the wishes of the Edinburgh College.

Mr. WILLMOTT said he had not found the use of spirit in making mucilage of tragacanth so advantageous as many had represented; he did not think the mucilage in question could be made by any process in less than four hours, and then it would not keep many days.

Mr. BEYNON noticed the variation in the quantities of the mixtures ordered to be made; in some cases the forms were for 8 oz., in some for 16 oz., in others for 20 oz., and in the case of Mist. Ferri Co. for 10 oz., which was very inconvenient.

Mr. BEEDZLER thought that the simple tincture of guaiacum ought not to have been omitted; a much more elegant mixture than the present one might be made by adding it to distilled water. The Mist. Ammoniaci might also be made in the same way. He agreed with Mr. Parsons that acetic acid was not required in Mist. Creasoti.

A vote of thanks was accorded to Mr. Parsons for his paper, and to Mr. Weaver, who had kindly taken the chair at a moment's notice.

On Thursday, July 7th, the annual general meeting was held. The council of the Society, on retiring from office, presented their report, which was read by the secretary, and proved highly satisfactory, showing that the affairs of the Association were in a prosperous condition. The treasurer's report showed that the balance in hand was larger than that of any previous year. A hearty vote of thanks was given to the retiring officers for the able manner in which they had conducted the business of the Association. The officers for the ensuing session were elected, and in accordance with the usual custom, the meeting was adjourned until October 5th, when an address will be delivered by the President, Mr. Sands.

THE LEICESTER CHEMISTS' ASSISTANTS' AND APPRENTICES' ASSOCIATION.

The half-yearly meeting of the above Association, was held at St. George's Rooms, Rutland-street, on Friday, August 5th, 1870.

The President, Mr. J. YOUNG, called upon the Treasurer, Mr. E. H. BUTLER, to read his financial report, who explained that the smallness of the balance in hand was accounted for by the fact that several subscriptions due from honorary members had not been collected, in order that their acknowledgement might appear in the balance-sheet of the *next* half-year, in which session the subscriptions of the majority of the honorary members would become due.

The President then called upon Mr. W. B. CLARK, Honorary Secretary, to read his report; from which it appeared that during the session, nine members of the Association (forming more than 35 per cent.) had passed eleven examinations of the Pharmaceutical Society, as follows:— Three minor, two modified, and six classical or preliminary examinations. This highly satisfactory result, the committee think, *has not its equal in any similar Association.*

Classes have been conducted by the more efficient members of the Association during the session, upon Chemistry, Materia Medica, Botany, Latin and Arithmetic. Scientific papers have also been read by several gentlemen upon interesting subjects, to whom the best thanks of the Association are due. Forty-eight meetings have been held during the half-year, which have afforded great facilities for the improvement of the members, and have been well attended.

Mr. CLARK proposed, and Mr. YOUNG seconded, "That in acknowledgement of the services rendered to the Association by Mr. EDWARD ATKINS, B.Sc., and Mr. R. WEAVER, C.E., these gentlemen be elected honorary members." Carried.

The meeting then proceeded to ballot for the committee for the ensuing half-year, with the following result:—

*Mr. Jos. YOUNG, President.
* „ W. E. HILL, Vice-President.
„ S. H. CADOUX, Honorary Secretary.
* „ E. H. BUTLER, Treasurer.
* „ W. B. CLARK.
* „ W. B. BLUNT.
„ E. GREEN.

* Associates of the Pharmaceutical Society.

The committee beg thus publicly to express their grateful thanks to Professor Attfield, Ph.D., and to the Rev. R. Harley, F.R.S., for their kind services in forwarding the respective examination papers, for the chemistry and arithmetic classes.

THE BETTS CHANCERY SUITS.

Dear Sir,—We have again to address you on the subject of the Betts suits, partly in the nature of a report of what has been accomplished, and in part to show that more remains to be done.

The *Times* of June 30th, the *Standard* of July 2nd, the *Pharmaceutical Journal* of July 9th, and the *Chemist and Druggist* of July 15th, contain reports of the proceedings which resulted in the dismissal of the bills filed by Mr. Betts in these suits; but since those dates the plaintiff has brought the cases before the Lord Chancellor, and obtained an order under which he has appealed. We are advised that, if the appeals be properly contested, the defence will continue successful, and for that object we need, and earnestly solicit your co-operation.

So long a time has passed since the Betts suits were instituted, and our Committee and Defence Fund formed, that the general consternation, which once prevailed, has passed away, and perhaps to an extent become forgotten; we therefore venture to remind you of the facts.

Twenty-five bills in Chancery were filed against chemists, perfumers, mineral water dealers, and others, vendors of capsuled articles. A person in the employ of Mr. Betts went into a shop and bought there a single bottle, the cork of which was covered with a capsule bearing the name and address of the person who manufactured the article and affixed the capsule. The retailer, having bought and sold the article in the ordinary course of his trade in perfect innocence, then received a letter from Mr. Betts's solicitor, stating that he " was instructed by Mr. Betts to commence proceedings for an infringement of his patent by the use and sale of his metallic capsules on bottles, which capsules had not been made by Mr. Betts, but of precisely similar materials." The retailer replied, " As I have never capsuled, or caused to be capsuled any bottle or pot in my establishment, perhaps you will have the goodness to let me know in what way I have infringed the patent;" to which the answer was, " I beg to state that the sale by you of the capsules on bottles is the infringement complained of. Any person supplying you is equally liable, and the time will come when you will be interrogated as to who has supplied you, when, and in what quantities," and on the same date the bill was filed.

Mr. Betts is very experienced in litigation; he was offered by Mr. Rimmel £1,000 for peace, and refused it; and when an attempt at an arrangement was on foot, he talked of twenty or thirty thousand pounds as something solid, something to eat, to be paid by the "Pharmaceutical body" (how much more from other traders was not stated). Some of the defendants settled with Mr. Betts by paying £20 to £25 each; but it was felt that unless a stand was made, Mr. Betts might go through the kingdom in detail, and, with sums of £20 or £25 a-piece obtained from chemists, perfumers, wine merchants, grocers, and others, fill his money-bags at the expense of legitimate traders, and also, that success by Mr. Betts in that operation, might encourage other patentees to pursue a similar line, and render business intolerable. Thus, a stand was resolved upon; a committee was formed; and a defence fund raised.

Under cross-examination, Mr. Betts did not recognise his own goods of English manufacture, and admitted having sundry manufactories *abroad;* and when it appeared likely that the capsules on the purchased bottles had been made by his Paris house, he set up a subtle distinction between Betts as a French manufacturer, and (the same) Betts as an English patentee, so that the Vice-Chancellor said, "I must say this seems to me about the most impudent case that ever came into Court. I am shocked at such a mode of making an affidavit. I hope never to see it again."

But Mr. Betts, "the hero of a hundred fights," will not sit down under the condemnatory judgment of the Vice-Chancellor. He appeals to the Lord Chancellor, and may resort to the House of Lords; and unless he is resolutely met, it is impossible to predict the result. The defence entails expenses which are, and will be, heavy; and we have to appeal, as we do with confidence, to the great body of retail and wholesale dealers to aid the object by a general subscription. Their protection from similar suits has no doubt been secured by the defence, as the patent has expired during the four years of litigation.

It should be understood that the Defence Committee is not identified with, and has no claims upon the Pharmaceutical Society, though many of the leading members of the latter have taken an active interest in the object for which it has been formed.

Contributions to the Defence Fund, in stamps, Post-office orders, or cheques, crossed "London and County Bank," may be paid to the Treasurer, Mr. Lionel Newbery, 44, St. Paul's-churchyard, London, E.C.

Enclosed is a form for your subscription, and we ask the favour of your filling it up and remitting it at your earliest convenience.

For the Defence Committee,
William Temple Cooper,
26, Oxford Street, London, W., *Chairman.*
1st *September,* 1870.

The following Gentlemen form the Defence Committee, who will furnish any required information:—

Barclay, Robert, Farringdon-street, E.C.
Carteighe, Michael, 172, New Bond-street, W.
Cooper, Wm. Temple, 26, Oxford-street, W.
Ellis, Geo. H., 4, Pavement, Finsbury, E.C.
Field, George, 168, Edgware-road, W.
Hart, Walter, 38, Blackman-street, S.E.
Hills, Thos. Hyde, 338, Oxford-street, W.
Hovenden, Robert, Jun., 5, Great Marlborough-street, W.
Newbery, Lionel, 44, St. Paul's-churchyard, E.C.
Potts, Robert N., 26, South Audley-street, W.
Redwood, Theophilus, 17, Bloomsbury-square, W.C.
Sandford, George Webb, 47, Piccadilly, W.
Sanger, Wm. Albert, 150, Oxford-street, W.
Smith, Fredk. William, 139, Newington-causeway, S.E.
Willmott, Wm., 83, High-street, Borough, S.E.

LAW AND POLICE.

INFRINGEMENT OF THE PHARMACY ACT.

The defendants were husband and wife, and were sued for the penalty of five pounds, incurred by their using the title of chemist and druggist, neither of them being registered under the Pharmacy Act, 1868. Mr. Flux (of London) appeared for the Society, and Mr. Wood (of London) appeared for the defendants. Mr. Flux, in opening the case, said that the action was brought in the exercise of powers which the Society used with reluctance, as was shown by the fact of this case being but the third which had been brought under the statute. The defendants' course of conduct had rendered the action a necessity, because the title was used by them with distinct knowledge that they were violating the law; and upon the customary application being sent to them before action, they replied by a letter so defiant that to avoid the issue of a plaint was a virtual impossibility. The letters having been admitted, he read them as containing an admission that the defendants were using the title chemist and druggist, and then referred to the sections 4 and 15 of the Act of Parliament, as showing that the defendants had incurred the penalty, and that the register proved itself, and was conclusive in favour of the plaintiffs. As, however, the defendants were, by their attorney, prepared to admit the use of the title, he asked the Court to accept and record the admission, and also as the defendants desired an opportunity of cross-examining the Registrar, he (feeling it desirable, in a matter of the kind, to pursue the most open course) should put the Registrar in the witness-box, and ask him a few formal questions, in order to afford the other side the opportunity for the cross-examination.—The Judge (to Mr. Wood): —Do you admit that the defendants used the title chemist and druggist?—Mr. Wood: I do.—The Judge: Then I shall take a note of the admission. What have you to say? —Mr. Wood then raised a technical objection to the form of the particulars of debt, but that was overruled.—Mr. Elias Bremridge was called, and proved that he was the Registrar of the Pharmaceutical Society of Great Britain, and brought the action with the sanction of the Council of that Society.—Cross-examined by Mr. Wood: I was appointed Registrar, and was authorized to bring this action by resolutions of the Council, which are recorded in minutes.—Mr. Wood (to the Judge): I raise the objection that the facts of the witness being the Registrar and being authorized by the Council, can only be proved by the production of the minute-book.—Mr. Flux: I submit, Sir, that the witness derived his authority not from the record of the resolutions in the minute-book, but from the resolutions themselves as they were orally passed; that the witness is acting in the exercise of powers cast upon him by the legislature; and that he is not to be called upon to prove his authority by the production of any minute or other books.—The Judge: I consider that the objection is untenable, and shall allow the case to proceed. It is never required of officers of the army or others acting in public capacities that they shall produce their commissions or other written authorities. It is enough for me that the witness is acting in the capacity of registrar in the bringing of this action, and that no evidence calling his status in question has been given; but I will take a note of the point, in order that Mr. Wood, if he pleases, may look into authorities and bring the subject before me by way of motion for a new trial.—Mr. Flux: Perhaps your Honour will take judicial note of the fact that in the Register of Chemists and Druggists there is printed the full name of the witness, with his description, "Secretary and Registrar of the Pharmaceutical Society of Great Britain."—The Judge: I will do so.—Cross-examination continued: I received from the defendant Mrs. Colmer, forms filled up according to Schedules C and D of the Act. The one was signed by her and the other was signed by a person purporting to be a duly qualified medical practitioner and whom I believe to be a son of the defendants; they were dated 30th November, 1868. I received afterwards similar papers dated the 20th March, 1869, and signed by the male defendant and by the same medical practitioner, and I afterwards received papers dated 6th April 1869, also signed by the male defendant, giving his address as of a place in London, and purporting to be signed by a duly qualified medical practitioner. The male defendant tendered to me £5 as provision for fees upon the registration of his name.—Re-examined.—I was not satisfied by either of the sets of papers, and I did not enter the names of the defendants or either of them upon the Register of Chemist and Druggists. The judgment exercised by me upon the papers was so exercised *bonâ fide*. The cases of the defendants are not the only cases, by many hundreds, in which papers in due form failed to satisfy me. I have informed both of the defendants, over and over again, that they have not been placed on the Register. The statute gives an appeal to the Council, but no appeal by either of the defendants has ever been made.—Mr. Flux: That is my case, your Honour.—Mr. Wood then, without calling witnesses, addressed the Judge upon the facts, and contended that, it having been elicited upon cross-examination that each of defendants had sent to the Registrar forms in accordance with Schedules C and D of the Act of Parliament, it was thus proved that the defendants were, by force of the clause numbered 5 in the Act of Parliament, chemists and druggists, and as such entitled to be registered; but that whether they were registered or not, they were chemists and druggists within the meaning of the statute, and not exposed to the penalty for which the action was brought.—Mr. Flux contended that the published Register was conclusive against the defendants that the Registrar had exercised *bonâ fide* a *quasi* judicial function, and that it was not contemplated by the statute, or in accordance with the practice of the law, that the *bonâ fide* decision of the Registrar should be revised by a judge sitting in a court; that the issue before his Honour was not whether the defendants were entitled to be placed on the Register, but whether not being on the Register, and using the title chemist and druggist, they had incurred the penalty under the statute. He then referred to the preamble, and the sections 1, 5, 13, 15 and 26 of the Statute, arguing that they were consistent with each other, and only consistent with the construction of the 13th and 15th sections for which he contended, namely, that having regard to the admission of the defendants that they used the title chemist and druggist, the only question of the Court was whether they were upon the Register; and then read M'Call's case and Marwood's case, as reported in the March number of the *Pharmaceutical Journal*, and the opinion of the Attorney-General therein referred to.—The Judge: It is a rule of construction in relation to Acts of Parliament of this kind, that the Court shall advance the remedy intended by the Act. Now, I find that this Act has been passed to protect the public in the matter of the sale of poisons; that the preamble says, "It is expedient for the safety of the public that persons keeping open shop for the retailing, dispensing, or compounding of poisons, and persons known as chemists and druggists, should possess a competent practical knowledge of their business." I find also, that by section 13, provision is made for a register of qualified persons, and the Register is made evidence. It is admitted that the defendants used the title chemist and druggist, and the Register—published in accordance with the Act—is in my hands, without their names appearing in it. I cannot adopt the view which has been contended for in the interests of the defendants, and I consider that the plaintiffs are entitled to recover the penalty provided by the 15th section. Judgment for the plaintiffs.

DISHONEST ASSISTANTS.

Jonathan Kitchen, 37, and William Evans, 37, both described as chemists, and well educated, were charged at the Middlesex Sessions (August 29th) with stealing a quantity of borax, castor oil, and other articles, value £44, the property of Mr. Walter Rumboll, surgeon, of 118, Kingsland-road, the employer of Kitchen. Mr. Collins and Mr. Moody prosecuted; the prisoners were undefended. Mr. Rumboll is in practice in Shepherdess-walk, Hoxton, and has also a shop at 118, Kingsland-road, which he employed Kitchen to manage, having taken him into his service on Evans's recommendation. Mr. Rumbell dealt for some of his drugs with Mr. Stevens, of Hyde-road, Hoxton, and it appeared that on the 13th of June Evans sold to Stevens some borax, castor oil, and the other things mentioned in the indictment. After buying them Mr. Stevens found that the things bore his private mark, and were part of the goods he had sold to Mr. Rumboll. When he next came Mr. Stevens spoke to him about it and he left without making any explanation. Subsequently, Mr. Stevens saw Kitchen go to Mr. Rumbell's shop. On being accused, Evans said Kitchen gave him the things to sell, and he had given the money to Kitchen's wife. To-day he said he had bought the goods himself, and that they were not Mr. Rumboll's property. Kitchen's defence was that he had foolishly allowed Evans to visit him at the shop and on some occasions to stay all night, and that Evans had taken the things without his knowledge. The jury found Evans "Guilty," and Kitchen "Not Guilty." A second indictment against Kitchen for embezzling the sum of 15s., received on account of Mr. Rumboll, was then proceeded with, and on this he was convicted. Evans acknowledged having been sentenced to eighteen months' imprisonment in this court in April, 1868, for larceny, and a summary conviction of earlier date was proved against him. Evans received a very bad character from the police, who said he had at one time been in business for himself as a chemist, but had fallen into embarrassment through misconduct. While in business the other prisoner had been in his employment, but Kitchen denied that he had ever known till quite recently of Evans having been convicted. Nothing was known against Kitchen before the present charge. Mr. Serjeant Cox observed that it was useless to pass upon Evans a sentence of less or even of equal severity with that he had previously undergone. He had, there was little doubt, led Kitchen into crime, and induced him to rob his master. The sentence would be one of seven years' penal servitude. Kitchen was sentenced to six months' imprisonment, with hard labour.

BROADBENT *v.* ARNOTT AND ANOTHER.

At the Northern Circuit, Liverpool, on the 27th ult., this matter was investigated before Mr. Justice Lush, and a special jury. Mr. Holker, Q.C., and Mr. Myburgh were counsel for the plaintiff; Mr. Milward, Q.C., and Mr. W. C. Gully for the defendants. The plaintiff carried on business in Liverpool, and the defendants were general brokers and chemical manufacturers in London, and the action was brought to recover £232, the amount for which the plaintiff had accepted bills against consignments of goods made through him from the defendants to a firm in Barbados. The case involved complicated commercial relations, and the defendants had pleaded an elaborate equitable plea, but there was in the end a verdict for the plaintiff for the amount claimed.

ALLEGED FRAUD ON THE REVENUE.

On the 6th of September, at the Clerkenwell Police Court, inquiry was opened into a charge of defrauding the Revenue, preferred against John Sutton, in selling and exposing for sale a large quantity of drugs and medicines unstamped, although liable to duty. The defendant had rendered himself liable to nearly £3,000 penalty. Mr. Tilsley, from the Inland Revenue Office, Somerset House, prosecuted, and Mr. Beard defended. An objection concerning the service of the summons was raised, and the case was adjourned for a fortnight.

POISONING CASES.

On the 13th ult., the wife of a beerseller, named Warburton, residing at Eastwood, Rotherham, committed suicide by taking a quantity of Davy's Vermin Killer. The woman had been on a visit to a friend or relation at Derby, and returned home later than was expected, when a quarrel ensued between the deceased and her husband. Whilst excited by passion after the altercation she drank the poison, the deadly effects of which two medical gentlemen were unable to avert.

A DANGEROUS MISTAKE.

An out-patient of the Royal Free Hospital was on Tuesday brought before Mr. Cooke, the police-magistrate, charged with having swallowed some poisonous lotion. It was labelled "Poison" in large letters. She stated that she had drank it in mistake, and was at once discharged.

EFFECTS OF GODFREY'S CORDIAL.

An inquest was held on Tuesday the 16th August, at Nottingham, on a child five months old, who, having suffered from diarrhœa, had "Godfrey's Cordial" administered to it by its mother. The child succumbed, and a post-mortem examination showed that death had been accelerated by opiates. A verdict in accordance was given, and the mother was reprimanded by the coroner, for her conduct in administering the "remedy."

KILLED BY A POISONED FLY.

A singular fatality has occurred at Newmarket. A woman named Cooper, housekeeper to Mr. W. Boyce, was sitting near a table on which were some poisoned papers for the purpose of killing flies. A fly was seen to go to one of these papers and then to alight on the woman's nose, which was slightly scratched. The wound speedily became inflamed, in a short time her whole system became affected, and in about twenty-four hours the poor woman died.

OPIUM POISONING CURED BY ELECTRICITY.

Four cases are reported as cured when the patients were *in extremis*, and when all the usual means were employed and failed, by simply applying one pole at the nape of the neck, and the other in the perineum. In fifteen minutes the patients were out of danger.

GOSSIP.

Thirty-three ladies have been dubbed Bachelors of Art at Vassar College, U.S.

Dr. Debus, F.R.S., has been appointed to succeed Dr. Alfred Swaine Taylor, F.R.S., as Professor of Chemistry at Guy's Hospital Medical School.

Dr. Odling has consented to open the session at the London Institution, Finsbury-square, with a series of educational Lectures on "Chemical Action." After Christmas, Professor Huxley will deliver a course on the "First Principles of Biology."

At Leeds, this week, four persons were summoned before the magistrates for refusing to have their children vaccinated. One of the defendants, a chemist named Toulson, was summoned for the thirteenth time. All the defendants were ordered to comply with the Act, and to pay costs.

A meeting of the trustees of Anderson's University was held in Glasgow on August 23rd to elect a Professor of Scientific Chemistry, this Chair being vacant in consequence of the death of Dr. Penny. Mr. Young, the President, occupied the chair. Four candidates were nominated, and on the vote by ballot being taken, Dr. T. E. Thorpe, Owens College, Manchester, was declared duly elected.

The want of a medical ambulance in all large towns has been long needed and felt. Generally, the public view with great suspicion vehicles which are thought to be used by persons suffering from infectious or contagious diseases, hence the desirability of carriages being specially provided for such cases. The local Board of Health for Bristol has provided a special carriage to be used for such cases, to be lent, free of charge, to persons requiring it, subject to certain rules. Parties requiring it must provide their own horses and harness at their own expense, and it will be disinfected after every time of using by the medical inspector of health, who will be held responsible for its being free from infection. The committee of the Local Board have given notice that they will strictly enforce the penalties under the provisions of the Sanitary Act, 1866, "against any person suffering from any dangerous, infectious, or contagious disorder, entering or exposing himself in any public conveyance, and against the person in charge of one so suffering, who so exposes the sufferer, and against the owner or driver of such conveyance." Copies of the regulations have been sent to every medical practitioner, and cab proprietor in Bristol.

Trade Memoranda.

The guardians of the borough of Birmingham are open to receive tenders for the supply of drysalteries for three months. Opened on the 21st inst.

A meeting of the chemists of Cheltenham was held on the 6th inst., from which we are pleased to state only two members of the trade were absent, was held to organize a united trade contribution of the drugs chiefly required in war, such as morphia, chloroform, and quinine. The meeting was thoroughly unanimous, and it is expected that the contributions would realise £60 or £70.

Messrs. Collingridge, the publishers of the *City Press*, are busy compiling a new City Directory, which, we are are informed, is likely to be of especial use to commercial men. Kelly's Directories have hitherto given such general satisfaction, that it is a rather bold undertaking to enter the lists against them; nevertheless, we look forward with interest to the competition between the two firms.

Mr. Jabez Francis, of Rochford, Essex, has sent us samples of printing done with his cheap presses for amateurs, which seem very satisfactory. The testimonials published with them, several of which are from chemists, speak highly of their usefulness.

Under the head of "Free Trade in Surgical Instruments," the following letter is published in the *Pharmaceutical Journal*. Messrs. Maw, Son and Thompson are held in such high and deserved esteem by the trade, that their frank statement will be received with pleasure and confidence :—

"Sir,—May we be allowed to say a few words with reference to the article in your journal of July 30th, in which our names appear?

"In sending our catalogue of surgeons' instruments to the profession direct, we most certainly had no intention of injuring in any way our best customers, the chemists and druggists; indeed, apart from any better feeling, our own interest would have prevented our doing this.

"We learnt from experience that the surgeons would buy their instruments direct, and in endeavouring to transact this branch of our business through the chemists, we found we were seriously prejudicing ourselves without really serving them.

"With regard to the few sundries included in the surgeons' price-current they were added simply to satisfy the profession without furnising our general list, and we carefully excluded all articles that we thought could possibly interfere with the chemists. As, however, they think otherwise, in future we shall confine our surgeons' list strictly to surgeons' instruments and appliances.

"We fear, owing to misconception, which we deeply regret, that we have been the subjects of some ill-feeling in certain quarters, but this we feel confident will disappear when our motives become better understood.

"In the conduct of our business we have always scrupulously studied the benefits of the trade, even when to our own pecuniary loss.

"Apologising for troubling you on a matter which, although of a personal character, is of no little importance to us.

"We are, Sir, yours obediently,
"S. Maw, Son and Thompson."

We call attention to some varieties of good cough lozenges, introduced by Messrs. Howard Hall and Co., of the Eagle Mills, Spitalfields.

At the monthly meeting of the Exeter Town Council on Thursday a letter from Messrs. J. L. Thomas and Co., oil merchants, Exeter, was considered, in which they made application for a reduction in the canal and town dues on rosin and benzoline. Both of these articles they proposed to import into Exeter from America; and as they formed an entirely new trade to the district, Messrs. Thomas hoped the council would consider the application favourably. The Navigation Committee recommended the Council to reduce the dues on rosin to 1s. 1d. per ton, and on benzoline to 2s. per ton, and the Council unanimously agreed to the recommendation.

The application of art to the placards displayed at railway stations and elsewhere is quite a feature of modern advertising. The device whereby Messrs. Cash, of Coventry, made their rough towels prominent, was a clever one, representing four negroes in various positions, apparently trying to rub themselves white. But Messrs. Batty have outstripped all other advertisers in the ludicrous attractiveness of the design which introduces their Nabob Pickles to the public. In the centre, an exalted personage is seen gourmandising over these pickles, while an attendant waits with another bottle, that the monarch may know no cessation in his luxurious feast. A crowd of minions stand around, whose eyes sparkle with an indescribable, but most expressive, longing that their royal master will spare some fragments of the delicious morsels for them.

NOTES AND QUERIES

(*Harrow*-ING RECOLLECTIONS OCCASIONED BY READING AN ARTICLE IN THIS JOURNAL *on Ginger Beer, &c.*)

Ye sweets of my childhood, whose bare recollection
Will now make me shudder to think of the past,
Since science has proved beyond contradiction,
On what villainous messes I used to repast.

With sorrow I own how I used to demolish
A confection of sugar and almonds allied;
And how often I quaffed with an evident relish,
That "beer" which is not to "abstainers" denied.

But, judge of my horror at finding from *Muter*,
That this sweetmeat, whose odour and taste were so fine,
Was destitute quite of an almond interior,
And chiefly consisted of sulphate of lime!

The Ginger Beer, too, which I fondly imagined
Was prepared from loaf sugar, best ginger, and yeast,
Is found to contain lead, copper, and iron,
With petroleum enough to poison a beast!

Ginger Beer of my boyhood! O don't I regret you!
'Tis you I must thank for this weight on my chest;
And frequent attacks of dyspepsia and ague,
Are due I feel sure to the charms you possessed!

And now let us ask Doctor Muter to show us,
Some sweets we may safely consume in the future,
Or with Virgil we'll cry, "O! si præteritos
"Mihi magnus annos referat *Muter*!"

F. W. F.

Atramentum asks for a good recipe for an ink which will dry black.

E. Haworth (Oswaldtwistle). — The next preliminary examination of the Pharmaceutical Society will take place on October 3rd. Another will occur about three months afterwards, but we believe the day is not yet fixed. In the provinces the examinations are held under the superintendence of the local secretaries, who receive the questions on the morning of examination, and open them in the presence of the candidates.

W. Thomas (Builth).—The question as to whether grocers may sell arsenical sheep-dipping compounds was fully discussed in the Chemist and Druggist for September, 1869. Our opinion is most decidedly that they may not. You should communicate with the Registrar, 17, Bloomsbury-square.

A. Weddell.—We believe Anthony Trollope has lately published a translation of Cæsar, but it would probably be too *free* for your requirements.

Washing horses in the morning with water in which are one or two sliced onions, is recommended as a means of keeping off flies.

Persons who prefer stale bread, can have their taste gratified, by sending to Pompeii, where they have loaves which were baked over 1800 years ago.

PATENTS

[The following list has been compiled expressly for the Chemist and Druggist, by L. de Fontainemoreau. Patent Agent, 4, South-street, Finsbury, London; 10, Rue de la Fidélité, Paris; and 33, Rue des Minimes, Brussels.]

Provisional Protection for six months has been granted for the following:—

2046. J. E. Duyck, of Glasgow. Improvements in treating mineral oils. Dated 20th July, 1870.
2049. G. Phillips, of Tufnell-park-road. Improvements in preparing charcoal for decolorising syrups and other solutions. Dated 20th July, 1870.
2064. R. T. Shiells, of Edinburgh. Improvements in preserving vegetable matter. Dated 21st July, 1870.
2065. J. H. Johnson, of London. Improvements in the production of sulphuric and hydrochloric acids, of carbonates of potash and soda, and also of chlorine. Dated 21st July, 1870.
2111. P. C. Don, of Lime-street. Improvements in manufacturing carbonate of soda. Dated 27th July, 1870.
2175. J. C. Young, of Warrington, Lancaster. Improvements in apparatus for fastening and securing cupboards, or receptacles for containing poisons or other chemical preparations, which invention is also applicable to other similar purposes. Dated 4th August, 1870.
2293. D H. Lowry, of Runcorn, Chester. An improvement in the manufacture of sulphuric acid. Dated 19th August, 1870.
2303. C. Morfit, of Sudbrook-park, Surrey. Improvements in the manufacture of superphosphate of lime. Dated 20th August, 1870.

Letters Patent have been issued for the following:—

305. W. R. Lake, of London. An improved automatic apparatus for producing carbonic acid for the manufacture of effervescing or gaseous liquids, and for the application of such liquids to various purposes. Dated 2nd February, 1870.
365. E. Kruger, of Portobello, Midlothian, North Britain. An improved method of re-utilizing caustic soda lye. Dated 8th February, 1870
450. J. Mason, of Farnsfield, Nottingham. Improvements in apparatus for measuring oil and other liquids. Dated 16th February, 1870.
515. W. R. Lake, of London. A method of producing an improved black pigment, and obtaining phosphates and other substances from the waste portions of the hop plant. Dated 22nd February, 1870.
590. H. W. Dee, of Sherwood-street. Improvement in caps for scent and other bottles or vessels. Dated 28th February, 1870.

673. W. E. Newton, of London. Improved apparatus for injecting and reducing liquids to a state of spray or minute subdivision. Dated 7th March, 1870.
713. J. J. Lundy, of Leith, near Edinburgh. Improvements in effecting the decolorization, deodorization, and purification of foul and waste waters of sewage and of supernatant sewage water. Dated 10th March, 1870.
948. A. V. Newton, of London. Improvements in preparing Iceland and Irish moss for use as a food. Dated 31st March, 1870.
1783. W. E. Newton, of London. An improved mode or process for obtaining glycerine from soap-makers' spent lyes. Dated 22nd June, 1870.

Specifications published during the month. Postage 1d. each extra :—

1869.

3494. P. A. S. Langlois and L. S. Thomassin. Manufacture of sulphuric acid. 1s. 10d.
3565. C. A. McCalla. Stoppering bottles and measuring liquids. 1s.
3613. R. Morton. Refrigerators, etc. 10d.
3647. A. R. Stocker. Stoppers for feeding bottles. 1s.
3662. W. E. Gedge. Pessary. 8d.
3691. G. C. Fraser. Disinfecting or drying clothes, etc. 8d.
3707. H. Bessemer. Steam and sailing vessels, and apparatus] for preventing sea-sickness. 1s. 10d.
3708. G. Fuller, G. Spencer, and E. Martin. Feeding bottles. 4d.
3714. J. Rae and J. Wright. Supplying sea-water for bathing, etc. 4d.
3745. E. P. H. Vaughan. Manufacture of fluoride of potassium and sodium, etc. 4d.
3752. G. Spencer. Preserving animal and vegetable substances. 2s.

1870.

28. J. G. Tongue. Purifying syrups. 4d.
46. J. Hargreaves and F. Robinson. Treating sulphur, etc. 4d.
50. G. Shand. Obtaining products from tar, etc. 4d.
58. R. Morris and M. D. Penney. Treating shoddy, etc. to obtain ammonia. 4d.
60. G. Gamgee. Antiseptic. 4d.
63. G. G. Tandy, J. A. Dryden, and W. Perkins. Oils and lamps. 10d.
97. W. H. Balmain and W. J. Menzies. Conveying and storing vitriol. 4d.
148. T. C. Sloggett. Preserving meat. 4d.
180. D. Spill. Treating xyloidine. 4d.
203. W. T. Waite. Preparing animal charcoal. 4d.
205. W. Garton. Preparing fermentable saccharine matters. 4d.
208. F. A. Barrow. Evaporating and concentrating liquids, etc. 4d.

Varia.

ARTIFICIAL ULTRAMARINE.

Ultramarine, as known to the ancients, was called *lapis lazuli*, and was a precious stone. Very fine specimens of the mineral were ground up and used by the old masters, Raphael, Guido, and Domenichino, for the choice paintings, but the colour was as dear as it was highly prized.

A few years ago a German chemist, while experimenting with anhydrous sulphuric acid and sulphur, made the accidental discovery that an exquisite blue colour was produced. He came to the conclusion that the blue colour of the ultramarine was probably due to sulphur and sulphuric acid, and at once instituted some experiments with alumina, soda, sulphur, and sulphuric acid, and succeeded, after repeated faliures, in actually imitating the precious stone. It is not necessary to follow out the history, but is more agreeable to refer to the great success attending this industry at the present time.

Ultramarine is now so cheaply made that it enters into more industries than the public are aware of. We find it in the laundry as a bluing to correct the yellow colour of linen. In the manufacture of white paper the consumption is becoming enormous. It finds ready application for fancy paper, paper hangings, and window shades, and is largely used in painting, not only decorations, but the common wood-work of our houses. In the refinery of sugar it is also employed to give a fine white colour to the loaf.

Its cheapness and the abundance of the supply have suggested its application in all cases where a clarifying substance is desired, and its manufacture has now reached proportions of many tuns per annum. We can buy a box of bluing for twenty-five cents that would have cost Raphael some thousands of dollars. Such is the success of the application of chemistry to the arts; and it is a colour of so much importance in many manufactures that its cheap preparation has become a matter of prime necessity, and numerous establishments now vie with each other in producing a choice and cheap article. The principal seat of the industry is in the neighbourhood of Nuremberg, where the original discovery of its artificial production was made.—*Scientific American.*

GINGILIE OIL.

The gingilie (*Sesamum Indicum*) is said to be an African plant, and is supposed to have been introduced to the West Indies by the negroes. It is now pretty generally distributed, and in this country it thrives admirably in the Newera Kalawyia district. The plant is cultivated for the seed, which yields a fixed oil. The method adopted in Ceylon of expressing the oil is rather primitive, and consequently it possesses an unpleasant flavour and a brown muddy colour. If properly prepared, the oil would form a very good substitute for sweet oil. The best method of preparing the oil is as follows:—First steep the seeds repeatedly in cold water, or boil them for a short time, till they are divested of the reddish-brown colouring matter contained in the epidermis of the seeds, then, when the seeds have become perfectly white, dry them in the sun, and express the oil in the ordinary way. The seed yields from 40 to 44 per cent. of a pale straw-coloured oil. When thus prepared the oil is perfectly devoid of smell, and may be used for extracting the perfume of the jasmine, tuberose, camomile, and yellow rose. To effect this, one weight of the flowers should be added to three weights of the oil in a bottle, which should be corked and left in the sun for forty days, when the oil will be impregnated with the perfume of the flowers. The gingilie oil is soluble in alcohol, saponifies with alkalies, solidifies by nitric acid, and combines with the oxide of lead. The gingilie oil is highly esteemed by Egyptian belles for its properties of cleansing the skin, and of imparting to it a bloom and lustre, and also of preserving the beauty and gloss of the hair. In Ceylon it is used for similar purposes. The negroes also use the seeds for making a sort of beverage something like coffee, by roasting the seeds and infusing them in water. The commercial value of the oil in England is £40 per ton.—*Jaffna News.*

COD-LIVER OIL.

The process of manufacturing the far-famed cod-liver oil at Portugal Cove, Newfoundland, is described in the *St. John's Telegraph.* The livers of the cod are sold by the fishermen to the manufacturer of the oil at the rate of 24c. a gallon. On the average it requires 2½ gallons of liver to produce a gallon of oil. The livers are first carefully washed, and must be "cooked" at once, while fresh. They are first put into a large tin boiler. This is plunged into a larger iron boiler filled with hot water, the water not being allowed to touch the livers, which are thus gently steamed till a quantity of oil is floating on the surface. This is dipped out and filtered through blanketing first; then twice afterwards it is filtered through bags of moleskin. From the last filtration it comes out of a beautiful crystalline transparency, and without any unpleasant smell or taste. The oil is now poured into 60 gallon casks, and forwarded to the exporting merchant. The refuse is placed under screw presses and the remainder of the oil extracted. This is not refined, but sold as common cod oil, and is used largely on railways and for lubricating machinery. The cod-liver oil has gone up in price lately, owing to the immense demand for it in Europe, and now it is sold to the merchant at the rate of 130 cents a gallon. Last year 330 tuns of it were exported, the value being 260 dols. per tun. Of the common cod oil, unrefined, 4,521 tuns were exported, the value being 144 dols. per tun. So plentiful has been the catch of cod this year that in one factory 2,000 had been barrelled before the season was half through. The men who handle it get quite a liking for the oil. A little dog running about the premises laps it eagerly. The secret of making good cod-liver oil lies in the application of the proper degree of heat—too much or too little will seriously injure the quality. Great attention to cleanliness is also necessary, the filtering bags requiring to be washed thoroughly every day, and the troughs scrubbed out with great care. The rancid oil that is frequently met with is the produce of manufacturers who are careless about these matters. The best oil is made in the way above described; and all the pretences of quacks about refining it, and making it palatable, are, it is declared, mere moonshine, and either covers for adulteration, or such as deprive the oil of its medicinal properties. There is, no doubt, an enormous amount of adulteration practised by the retailers of cod-liver oil, but it is maintained that it is not done in Newfoundland. The greater part of the oil goes to London, and there it is "doctored." The writer in the St. John's paper states that were a person with competent skill and capital to embark in the manufacture in Newfoundland on an extensive scale, and bottle the oil on the spot for the retailers, guarding it by a label and other securities, and guaranteeing a pure article of the best quality, his oil would speedily take the lead in the market.

SOCIAL SCIENCE CONGRESS.

This will be held in Newcastle-on-Tyne, in the last week of September, under the presidency of the Duke of Northumberland. The following subjects will be discussed under the Health Section:—1. What is the best method of disposing of sewage and excreta? 2. What modifications are desirable in the existing sanitary laws and administration? 3. What legislative measures ought to be taken to prevent the adulteration of food, drink, and drugs?

A NEW INSECTICIDE.

M. Cloez, who is engaged at the garden of the Paris Museum, has invented what he considers a complete annihilator for plant-lice and other small insects. This discovery is given in the *Revue Horticole*, with the endorsement of its distinguished editor, E. M. Carrière. To reduce M. Cloez's preparation to our measures, it will be sufficiently accurate to say, take three and one-half ounces of quassia chips, and five drachms of stavesacre seeds, powdered. These are to be put in seven pints of water, and boiled until reduced to five pints. When the liquid is cooled, strain it, and use with a watering-pot or syringe, as may be most convenient. We are assured that this preparation has been most efficacious in France, and it will be worth while for our gardeners to experiment with it. Quassia has long been used as an insect-destroyer. The stavesacre seeds are the seeds of a species of larkspur, or *Delphinium*, and used to be kept in the old drug stores. Years ago, they were much used for an insect that found its home in the human head; but as that has fortunately gone out of fashion, it may be that the seeds are less obtainable than formerly. The stavesacre seeds contain delphine, which is one of the most active poisons known, and we have no doubt that a very small share of it would prove fatal to insects.—*Scientific Opinion.*

ORIGIN OF TEA.

At what period the use of tea first became established in China is probably not a well ascertained fact; but we have strange descriptions of its origin by Chinese writers. One of these, a legend believed in by the religious portion of the community in China, is as follows:—"A pious hermit, who, in his watchings and prayers, had often been overtaken by sleep, so that his eyelids closed, cut them off in holy wrath against the weakness of the flesh, and threw them on the ground; but a god caused a tea shrub to spring out of them, the leaves of which exhibit the form of an eyelid bordered with lashes, and possess the gift of hindering sleep. When the hermit had tasted and proved the shrub, he taught the use of it to his fellow-men."—*Food Journal.*

TRADE REPORT.

We would gladly have commenced our report this month without reference to the war on the Continent. All its aspects have been so thoroughly discussed that it is not possible to add anything on the subject, and yet it is none the less impossible to leave it out of our consideration as the leading, if not the only, disturbing event on all markets of the past month. The heart of England is not so completely under the influence of shopkeeping views as to be eager to scan too narrowly the effects on her commerce and prosperity. Nevertheless, it is our duty to add our conviction that the general trade of the country has not been materially injured by the calamities of our neighbours. Indeed, the large amount of money kept in the kingdom which would under normal conditions have been spent abroad must be so much clear gain to the trading classes. Let us hope that those who have benefited in this manner will not be slow to remember their suffering fellow-men across the channel. It is probable that before this is before our readers, such events will take place as will decide whether or not another month of anxiety and bloodshed is to follow. Earnestly do we hope that wise and moderate counsels may prevail with the leaders of both powers, that peace and order may be again re-established.

Occasionally we meet with some slight evidence of the working of the New Bankruptcy Law. When its provisions were first made public we expressed ourselves as hopeful that it would in time work a salutary change in our unwritten code of commercial honesty. We have still that confidence, but evidently it will be a slow process. A firm of solicitors write to the *Daily Telegraph*, giving a practical instance of its working as far as concerns a case of "liquidation by arrangement," which they say is the first, or one of the first completed cases that have been carried out under the new law. They give the following particulars:—"The estate consisted, in about equal proportions, of stock-in-trade and book debts, and realized a gross sum of £615. The payments in full to preferential creditors exceeded £90; the claims of general creditors were £2,623. The total expenses have been: Remuneration voted to the trustee, £30 15s.; allowance voted to the debtor, £10; legal expenses, including Court and counsel's fees, advertisements, etc., £55; leaving, in round figures, £440 to be distributed among the creditors ranking for dividend, equal to 3s. 4d. in the pound. The time occupied, from filing the petition to the close of the liquidation, is just within three months. The trustee was the largest trade creditor. The debtor has received his discharge by vote of a meeting of the creditors." The proportion of expenses to nett dividends, and the time occupied in the realization of the estate is very satisfactory, when compared with the old system; but we think the time will come when still better results may be anticipated. We hope to hear ere long of some energetic, resolute, and capable men, who will devote themselves to what we believe will prove the remunerative occupation of professional trusteee. When such become established and trusted by creditors, as well as wholesomely feared by would-be reckless debtors, there will be a hope that in the majority of cases, estates will be so far saved or worked as to realize the now almost Utopian dividend of 10s. in the pound.

All reports state that demands for produce and manufactured chemicals is small, and limited to necessary requirements in consequence of the uncertain tone of feeling which prevails. This comparative lull in speculative enquiry has caused a slight decline in a few of those drugs which make large returns. Opium is quoted at 2s. lower. Camphor is slightly cheaper, also Cochineal. We also notice that the price of Saltpetre has receded 2s., and French Quinine has fallen about 3d. per ounce. Castor Oil is not quite so firm, but there is not at present any appreciable difference in the quotations. Bleaching powder is very much in demand, and the price has advanced 3d. per cwt. The reason given is the large extra consumption of paper by the newspaper establishments. Mercurials, too, have again advanced.

In drysalteries we notice no change, except a fall in Gambier and in Jamaica Logwood. Oils too are unmoved, except a decline in Rape and an extra firmness in Linseed.

In general, the markets are, as we have said before, in a state of suspense, and until prospects of quietness ensue, it is useless to attempt to gather any impressions of their probable future.

Monthly Price Current.

The prices quoted in the following list are those actually obtained in Mincing lane for articles sold in bulk. Our Retail Subscribers must not expect to purchase at these market prices, but they may draw from them useful conclusions respecting the prices at which articles are offered by the Wholesale Firms.]

CHEMICALS.

	1870.					1869.				
ACIDS—	s.	d.		s.	d.	s.	d.		s.	d.
Acetic ....per lb.	0	4	to	0	0	0	4	to	0	0
Citric ....per lb.	2	5¼	..	2	5½	2	5½	..	2	6
Hydrochlor. ....per cwt	4	0	..	7	0	4	0	..	7	0
Nitric .... per lb.	0	5	..	0	5½	0	5	..	0	5½
Oxalic .... ,,	0	8	..	0	0	0	7½	..	0	0
Sulphuric ...... ,,	0	0¾	..	0	1	0	0¾	..	0	1
Tartaric crystal .. ,,	1	3½	..	1	3¾	1	2	..	0	0
powdered ,,	1	4	..	0	0	1	2½	..	1	3
Antimony ore......per ton	360	0	..	400	0	260	0	..	280	0
crude ..per cwt	50	0	..	0	0	32	0	..	0	0
regulus.. ,,	70	0	..	75	0	51	0	..	0	0
star .... ,,	0	0	..	0	0	50	0	..	51	0
Arsenic, lump...... ,,	16	0	..	16	6	16	0	..	16	6
powder.... ,,	7	3	..	7	6	7	3	..	7	6
Brimstone, rough ..per ton	160	0	..	0	0	165	6	..	0	0
roll ....per cwt	11	0	..	0	0	10	6	..	11	0
flour.... ,,	12	0	..	13	0	13	0	..	13	6
Iodine, dry ....per oz.	0	9	..	0	9½	0	9¾	..	0	10
Ivory Black, dry..per cwt.	0	0	..	0	0	0	0	..	0	0
Magnesia, calcined..per lb.	1	2	..	0	0	0	0	..	0	0
Mercury...... .. per bottle	157	0	..	0	0	137	0	..	138	0
Minium, red ......per cwt.	21	0	..	0	0	20	9	..	21	0
orange .... ,,	31	6	..	32	6	31	6	..	32	6
Precipitate, red ....per lb.	2	9	..	0	0	2	6	..	0	0
white .. ,,	2	8	..	0	0	2	5	..	0	0
Prussian Blue ...... ,,	0	0	..	0	0	0	0	..	0	0
SALTS—										
Alum ....per ton	145	0	..	150	0	145	0	..	150	0
powder .... ,,	160	0	..	165	0	165	0	..	170	0
Ammonia:										
Carbonate ......per lb.	0	5¾	..	0	6	0	5¾	..	0	6
Hydrochlorate, crude, white........ per ton	480	0	..	560	0	480	0	..	560	0
British (*see* Sal Ammoniac)										
Sulphate ......per ton	320	0	..	325	0	330	0	..	0	0
Argol, Cape ......per cwt	50	0	..	67	6	65	0	..	80	0
France .... ,,	40	0	..	50	0	45	0	..	58	0
Oporto, red ,,	22	0	..	24	0	22	0	..	24	0
Sicily . .. ,,	32	0	..	40	0	32	0	..	40	0
Naples, white ,,	0	0	..	0	0	55	0	..	65	0
Florence, white	0	0	..	0	0	0	0	..	0	0
,, red ,,	0	0	..	0	0	0	0	..	0	0
Ashes (*see* Potash and Soda)										
Bleaching powd ..per cwt.	8	9	..	9	0	9	3	..	0	0
Borax, crude .... ,,	25	0	..	40	0	25	0	..	35	0
(Tincal) .. ,,	45	0	..	60	0	45	0	..	60	0
British refnd. ,,	63	0	..	70	0	69	0	..	70	0
Calomel ....per lb.	2	10	..	0	0	2	5	..	0	0
Copper:										
Sulphate ......per cwt.	23	0	..	24	0	23	6	..	24	0
Copperas, green ..per ton	50	0	..	60	0	52	6	..	60	0
CorrosiveSublimate..p.lb.	2	3	..	0	0	1	11	..	0	0
Cr. Tartar, French, p. cwt.	83	0	..	90	0	83	0	..	0	0
Venetian grey ,,	90	0	..	96	0	0	0	..	0	0
brown ,,	0	0	..	0	0	65	0	..	74	0
Epsom Salts ....per cwt.	6	0	..	7	0	7	6	..	8	0
Glauber Salts .... ,,	4	6	..	6	0	4	6	..	6	0
Lime:										
Acetate, white, per cwt.	12	6	..	23	0	12	6	..	23	0
Magnesia: Carbonate ,,	42	6	..	0	0	42	6	..	0	0
Potash:										
Bichromate ....per lb.	0	5	..	0	5¼	0	5	..	0	0
Carbonate:										
Potashes, Canada, 1st sort ......per cwt.	38	0	..	0	0	31	0	..	0	0
Pearlashes, Canada, 1st sort ......per cwt.	48	0	..	0	0	32	0	..	0	0
Chlorate ....per lb.	1	0	..	1	1	0	11	..	0	0
Prussiate ...... per lb.	1	0	..	0	0	0	11½	..	0	11¾
red .... ,,	1	9½	..	1	10	1	9½	..	1	10
Tartrate (*see* Argol and Cream of Tartar)										
Potassium:										
Chloride ......per cwt.	14	0	..	0	0	8	0	..	0	0
Iodide.......... per lb.	12	0	..	0	0	12	0	..	0	0
Quinine:										
Sulphate, British, in bottles ...... per oz.	6	3	..	0	0	5	9	..	0	0
Sulphate, French ,,	5	9	..	5	10	5	5	.	0	0
Sal Acetos ....per lb.	0	10	..	0	0	0	10	..	0	0
Sal Ammoniac, Brit. cwt.	41	0	..	42	0	38	0	..	40	6
Saltpetre:										
Bengal, 6 per cent. or under ......per cwt.	29	0	..	30	0	22	0	..	22	6
Bengal, over 6 per cent. per cwt.	27	0	..	28	6	21	3	..	21	9
Madras........ ,,	0	0	..	0	0	0	0	..	0	0
Bomb & Kurrachee p.ct.	0	0	..	0	0	0	0	..	0	0
European...... ,,	0	0	..	0	0	0	0	..	0	0
British, refined ,,	32	6	..	33	0	26	0	..	26	6
Soda: Bicarbonate, p.cwt.	10	6	..	0	0	10	0	..	0	0
Carbonate:										
Soda Ash.... perdeg.	0	1¾	..	0	2	0	1¾	..	0	1⅞
Soda Crystals per ton	80	0	..	82	6	82	6	..	0	0
Hyposulphite..per cwt.	18	0	to	0	0	16	0	to	18	0
Soda:										
Nitrate ....per cwt.	15	6	..	15	9	16	0	..	17	0
Sugar of Lead, White, cwt.	39	0	..	40	0	40	0	..	42	0
Brown .... ,,	26	0	..	28	0	29	0	..	30	0
Sulphur (*see* Brimstone										
Verdigris .... per lb.	1	0	..	1	2	1	0		1	2
Vermilion, English..per lb.	2	7	..	2	9	2	6	..	3	0
China.... ,,	3	0	..	3	2	2	9	..	0	0

DRUGS.

	1870.					1869.				
	s.	d.		s.	d.	s.	d.		s.	d.
Aloes, Hepatic....per cwt.	60	0	..	160	0	80	0	..	180	0
Socotrine .. ,,	100	0	..	220	0	120	0	..	300	0
Cape, good.. ,,	23	0	..	26	0	28	0	..	32	0
Inferior ,,	17	0	..	22	0	19	0	..	28	0
Barbadoes ,,	30	0	..	220	0	80	0	..	200	0
Ambergris, grey........ oz.	25	0	..	30	0	27	6	..	32	6
BALSAMS—										
Canada ....per lb.	1	0	..	0	0	1	2	..	0	0
Capivi .... ,,	1	7	..	1	9	1	9	..	1	10
Peru .... ,,	9	9	..	10	0	11	9	..	12	0
Tolu .... ,,	2	3	..	2	6	2	3	..	0	0
BARKS—										
Canella alba ....per cwt.	19	0	..	32	0	24	0	..	38	0
Cascarilla........ ,,	18	0	..	32	0	26	0	..	36	0
Peru, crown & grey per lb.	0	10	..	2	4	0	9	..	2	3
Calisaya, flat ,,	3	4	..	3	6	3	3	..	3	8
quill ,,	3	4	..	3	7	3	0	..	3	7
Carthagena ,,	1	0	..	1	9	0	9	..	1	8
Pitayo .... ,,	0	10	..	1	6	0	6	..	1	5
Red .... ,,	1	6	..	5	6	2	0	..	8	0
Bucho Leaves ...... ,,	0	3	..	0	6	0	3½	..	0	7
Camphor, China.. per cwt.	70	0	..	71	0	90	0	..	0	0
Japan ,,	70	0	..	75	0	97	6	..	0	0
Refin Eng. per lb.	1	2½	..	0	0	1	5	..	0	0
Cantharides ...... ,,	3	11	..	0	0	2	10	..	0	0
Chamomile Flowers p. cwt	40	0	..	72	6	50	0	..	90	0
Castoreum .... per lb.	3	0	..	30	0	4	0	..	32	0
Dragon's Blood, lump ,,	90	0	..	200	0	100	0	..	160	0
FRUITS AND SEEDS (*see also* Seeds *and* Spices.										
Anise, China Star pr cwt.	110	0	..	117		105	0	..	0	0
German, &c. ,,	25	0	..	40	0	25	0	..	38	0
Beans, Tonquin .. per lb.	0	9	..	1	4	1	0	..	1	6
Cardamoms, Malabar good ,,	9	6	..	10	6	7	4	..	7	9
inferior ,,	7	6	..	9	0	5	6	..	7	0
Madras ,,	5	6	..	9	3	4	6	..	7	6
Ceylon ,,	2	8	..	3	3	2	8	..	3	1
Corozo Nuts.... per cwt.	10	0	..	12	0	16	0	..	19	0
Cassia Fistula.. ,,	16	0	..	35	0	20	0	..	45	0
Castor Seeds .. ,,	10	0	..	12	0	11	0	..	13	0
Cocculus Indicus ,,	16	0	..	17	0	25	0	..	0	0
Colocynth, apple.. per lb.	0	4	..	0	8	0	5	..	0	9
Croton Seeds .. per cwt.	70	0	..	76	0	44	0	..	55	0
Cubebs .... ,,	27	6	..	32	6	36	0	..	39	0
Cummin........ ,,	40	0	..	60	0	55	0	..	65	0
Dividivi .... ,,	12	0	..	14	0	10	6	..	12	6
Fenugreek...... ,,	12	0	..	15	0	10	0	..	14	0
Guinea Grains .. ,,	26	0	..	30	0	35	0	..	36	0
Juniper Berries ,,	10	6	..	0	0	7	0	..	8	0
Myrobalans .... ,,	8	6	..	15	0	8	0	..	15	9
Nux Vomica.... ,,	9	0	..	13	0	12	0	..	14	6
Tamarinds, East India ,,	10	0	..	16	0	11	0	..	12	0
West India, new ,,	10	0	..	17	0	12	0	..	22	0
Vanilla, large .... per lb.	32	0	..	37	0	22	0	..	26	0
inferior ,,	25	0	..	30	0	10	0	..	21	0
Wormseed per cwt.	35	0	..	0	0	25	0	..	30	0
Ginger, Preserved, in bond (duty 1d. per lb.) per lb.	0	6	..	0	3	0	6	..	0	7
Gums (*see separate list*)										
Honey, Narbonne ,,	45	0	..	52	6	28	0	..	36	0
Cuba .... ,,	22	0	..	36	0	21	0	..	36	0
Jamaica.. ,,	31	0	..	52	0	25	0	..	45	0
Ipecacuanha .... ,,	4	6	..	5	0	5	3	..	5	
Isinglass, Brazil .. ,,	3	1	..	4	10	2	6	..	4	7
Tongue sort ,,	3	4	..	5	2	3	1	..	5	0
East India ,,	1	9	..	4	2	2	0	..	4	4
West India ,,	4	1	..	4	6	4	0	..	4	6
Russ. long staple	5	6	..	8	0	5	0	..	8	0
,, leaf ,,	3	0	..	5	6	3	0	..	5	9
,, Simovia	1	6	..	2	6	1	6	..	2	6
Jalap, good ...... ,,	1	8	..	3	0	3	2	..	4	0
infer. & stems ,,	0	6	..	1	6	0	6	..	3	0
Lemon Juice ... per degree	0	1	..	0	1½	0	1	..	0	1½
Liquorice, Spanish per cwt.	0	0	..	0	0	63	0	..	68	0
Italian ,,	40	0	..	60	0	48	0	..	67	0
Manna, flaky .... per lb.	2	10	..	3	6	4	0	..	4	9
small...... ,,	1	9	..	0	0	2	0	..	2	6
Musk.............. per oz.	16	6	..	32	0	16	0	..	33	0
OILS (*see also separate List*)										
Almond, expressed per lb.	1	0	..	0	0	1	1	..	0	0
Castor, 1st pale .... ,,	0	4¾	..	0	5	0	5¼	..	0	
second .... ,,	0	4½	..	0	4½	0	4¾	..	0	
infer. & dark ,,	0	4	..	0	4¼	0	4½	..	0	0
Bombay (in casks)	0	4	..	0	4½	0	4½	..	0	0
Cod Liver ......per gall.	5	0	..	6	6	5	6	..	7	0
Croton............por oz.	0	3½	..	0	4½	0	3	..	0	4
Essential Oils:										
Almond ....per lb.	42	0	..	0	0	42	6	..	0	0
Anise-seed ...... per lb.	7	6	..	7	8	8	6	..	9	0
Bay ....per cwt.	65	0	..	70	0	65	0	..	70	0
Bergamot ......per lb.	8	0	..	15	0	8	0	..	12	0
Cajoput, (in bond) per oz.	0	2½	..	0	3	0	1¾	..	0	2
Caraway ....per lb.	5	6	..	6	3	5	3	..	5	9
Cassia .... ,,	4	0	..	0	0	4	10	..	5	0
Cinnamon ......per oz.		0	..	4	6	1	0	..	4	6
Cinnamon-leaf .. ,,	0	2	..	0	6	0	4	..	0	0

	1870.		1869.	
Essential Oils, *continued:—*	s. d.	s. d.	s. d.	s. d.
Citronello ......por oz.	0 2 ..	0 0	0 2½ ..	0 0
fine.... ,,	0 2¼ ..	0 0	0 3 ..	0 3½
Clove............per lb.	2 6 ..	0 0	2 7 ..	0 0
Juniper .... ,,	1 9 ..	2 0	1 0 ..	2 0
Lavender........ ,,	3 0 ..	4 3	3 0 ..	4 3
Lemon.......... ,	5 0 ..	9 6	4 6 ..	8 0
Lemongrass ....per oz.	0 2⅝ ..	0 3	0 4½ ..	0 4¾
Neroli .... ,,	0 5 ..	0 6	0 5 ..	0 6¼
Nutmeg .... ,,	0 4 ..	0 7¾	0 4 ..	0 8
Orange..........per lb.	5 0 ..	7 0	5 0 ..	8 0
Otto of Roses....per oz.	13 0 ..	20 0	13 0 ..	21 0
Patchouli ...... ,,	6 0 ..	0 0	6 0 ..	0 0
Peppermint:				
American ....per lb.	15 0 ..	15 6	17 0 ..	18 0
English ...... ,,	36 0 ..	38 0	32 0 ..	42 0
Rosemary ...... ,,	1 9 ..	2 0	1 9 ..	2 0
Sassafras........ ,,	3 0 ..	0 0	4 0 ..	4 6
Spearmint ...... ,,	4 0 ..	16 0	4 0 ..	18 0
Thyme.......... ,,	1 10 ..	2 0	1 10 ..	2 0
Mace, expressed .. per oz.	0 1 ..	0 2½	0 1 ..	0 2½
Opium, Turkey...... per lb.	23 0 ..	32 0	26 0 ..	28 0
inferior ...... ,,	20 0 ..	27 0	18 0 ..	25 0
Quassia (bitter wood) per ton	100 0 ..	150 0	160 0 ..	170 0
Rhubarb, China, good and fine ....per lb.	4 3 ..	8 0	4 6 ..	9 3
Good, mid. to ord. ,,	0 7 ..	4 0	0 9 ..	4 0
Dutch trimmed ,,	9 6 ..	10 0	10 0 ..	0 0
Russian .... ,,	0 0 ..	0 0	0 0 ..	0 0
ROOTS—Calumba..per cwt.	27 0 ..	42 6	40 0 ..	50 0
China .... ,,	25 0 ..	35 0	27 0 ..	35 0
Galangal .... ,,	16 0 ..	13 0	15 0 ..	20 0
Gentian .... ,,	25 0 ..	26 0	19 0 ..	20 0
Hellebore ...... ,,	22 0 ..	30 0	22 0 ..	30 0
Orris............ ,,	50 0 ..	52 0	38 0 ..	44 0
Pellitory .... ,,	58 0 ..	60 0	58 0 ..	60 0
Pink..............per lb.	0 7 ..	0 10	0 7 ..	0 10
Rhatany .... ,,	0 8 ..	0 10	0 5 ..	0 10
Seneka............ ,,	2 10 ..	3 0	1 6 ..	0 0
Snake .... ,,	1 0 ..	0 0	1 9 ..	0 0
Saffron, Spanish .. ,,	52 0 ..	0 0	30 0 ..	38 0
Salep ....per cwt.	110 0 ..	0 0	110 0 ..	120 0
Sarsaparilla, Lima per lb.	0 6 ..	0 7½	0 7 ..	0 8
Para.............. ,,	1 0 ..	1 3	1 0 ..	1 3
Honduras .... ,,	1 1 ..	1 6½	1 2 ..	1 6
Jamaica .... ,,	1 9 ..	3 2	1 9 ..	2 6
Sassafras ....per cwt.	0 0 ..	0 0	13 0 ..	14 0
Scammony, Virgin ..per lb.	28 0 ..	32 0	28 0 ..	34 0
second & ordinary ,,	10 0 ..	23 0	10 0 ..	23 0
Senna, Bombay .... ,,	0 3½ ..	0 6	0 3 ..	0 5½
Tinnivelly .... ,,	0 3¼ ..	1 4	0 2 ..	0 11
Alexandria........ ,,	0 4½ ..	1 7	0 10 ..	1 8
Spermaceti, refined.. ,,	1 6 ..	1 7	1 4 ..	1 5
American .... ,,	1 4 ..	0 0	1 4 ..	0 0
Squill.............. ,,	0 1¼ ..	0 2	0 1 ..	0 2¼

GUMS.

	1870.		1869.	
	s. d.	s. d.	s. d.	s. d.
Ammoniaci drop ..per cwt.	100 0 ..	120 0	210 0 ..	280 0
lump .. ,,	60 0 ..	90 0	120 0 ..	200 0
Animi, fine washed ,,	300 0 ..	340 0	290 0 ..	340 0
bold scraped ,,	220 0 ..	200 6	200 0 ..	290 0
sorts ...... ,,	100 0 ..	200 0	100 0 ..	190 0
dark ...... ,,	75 0 ..	100 0	80 0 ..	110 0
Arabic, E. I., fine pale picked .. ,,	70 0 ..	75 0	78 0 ..	82 0
srts, gd. to fin ,,	60 0 .	68 0	65 0 ..	76 0
garblings.. ,,	30 0 ..	50 0	40 0 ..	60 0
Turkey, pick. gd to fin. ,,	160 0 ..	200 0	170 0 ..	220 0
second & inf. ,,	85 0 ..	155 0	90 0 ..	160 0
in sorts .. ,,	78 0 ..	100 0	70 0 ..	100 0
Gedda.... ,,	38 0 ..	44 0	33 0 ..	45 0
Barbary, white .. ,,	75 0 ..	82 6	33 0 ..	35 0
brown .. ,,	65 0 ..	68 0	67 6 ..	72 6
Australian ...... ,,	20 0 ..	42 0	25 0 ..	50 0
Assafœtida, com. to gd ,,	30 0 ..	90 0	23 0 ..	85 0
Benjamin, 1st qual. ,,	280 0 ..	440 0	240 0 ..	500 0
2nd ,, ,,	140 0 ..	200 0	140 0 ..	220 0
3rd ,, ,,	50 0 ..	90 0	50 0 ..	120 0
Copal, Angola red ,,	90 0 ..	100 0	100 0 ..	107 6
Benguela .. ,,	90 0 ..	100 0	100 0 ..	110 0
Sierra Leone..per lb.	0 4 ..	1 3	0 5 ..	1 4
Manilla ....per cwt.	30 0 ..	50 0	32 0 ..	50 0
Dammar, pale .... ,,	65 0 ..	75 0	95 0 ..	102 0
Euphorbium ...... ,,	13 0 ..	14 0	15 0 ..	16 0
Galbanum .... ,,	160 0 ..	260 0	220 0 ..	250 0
Gamboge, pckd. pipe ,,	240 0 ..	320 0	300 0 ..	345 0
Guaiacum ....per lb.	0 9 ..	2 4	0 8 ..	1 5
Kino..............per cwt.	60 0 ..	140 0	65 0 ..	140 0
Kowrie, rough.... ,,	30 0 ..	40 0	47 0 ..	60 0
scraped .. ,,	42 6 ..	100 0	63 0 ..	112 6
Mastic, picked......per lb.	7 6 ..	8 0	5 0 ..	5 6
Myrrh, gd. & fine per cwt.	180 0 ..	240 0	200 0 ..	260 0
sorts......	90 0 ..	175 0	90 0 ..	170 0
Olibanum, p. sorts	73 0 ..	73 0	80 0 ..	85 0
amber & ylw.	63 0 ..	70 0	71 0 ..	73 0
garblings.... ,,	26 0 ..	45 0	26 0 ..	46 0
Senegal ....per cwt.	77 6 ..	90 0	88 0 ..	95 0
Sandarac .... ,,	60 0 ..	97 0	71 0 ..	90 0
Thus.............. ,,	13 0 ..	14 0	13 0 ..	14 0
Tragacanth, leaf.. ,,	220 0 ..	380 0	220 0 ..	360 0
in sorts ,,	115 0 ..	210 0	115 0 ..	210 0

OILS.

	1870.		1869.	
	£ s.	£ s.	£ s.	£ s.
Seal, pale..........per tun	£37 0 ..	0 0	£40 0 ..	0 0
yellow to tinged ,,	36 0 ..	36 10	37 0 ..	39 0
brown........ ,,	34 0 ..	35 0	33 0 ..	34 0
Sperm, body ...... ,,	83 0 ..	84 0	90 6 ..	92 0
headmatter ,,	6 0 ..	0 0	0 0 ..	0 0
Oils, *continued :—*				
Cod................ per tun	39 0 ..	0 0	43 10 ..	44 0
Whale, South Sea, pale ,,	36 10 ..	37 0	39 0 ..	0 0
yellow ,,	35 10 ..	36 0	38 0 ..	0 0
brown ,,	35 0 ..	0 0	34 0 ..	35 0
East India, Fish ,,	32 0 ..	33 0	32 0 ..	0 0
Olive, Galipoli ...... ,,	49 0 ..	0 0	58 0 ..	0 0
Trieste ...... ,,	47 0 ..	0 0	57 0 ..	0 0
Levant ...... ,,	48 0 ..	0 0	52 10 ..	0 0
Mogador...... ,,	45 0 ..	46 0	51 10 ..	52 0
Spanish ...... ,,	50 0 ..	0 0	55 0 ..	56 0
Sicily .... ,,	48 0 ..	0 0	55 0 ..	0 0
Cocoanut, Cochin.. per ton	43 10 ..	0 0	44 0 ..	0 0
Ceylon .. ,,	38 0 ..	33 10	42 0 ..	42 10
Sydney ,,	32 0 ..	36 10	36 0 ..	42 0
Ground Nut and Gingelly:				
Bombay	0 0 ..	0 0	0 0 ..	0 0
Madras................	43 0 ..	0 0	40 0 ..	41 0
Palm, fine	39 0 ..	0 0	43 0 ..	0 0
Linseed	30 0 ..	0 0	31 10 ..	31 15
Rapeseed, English, pale ..	43 0 ..	43 10	42 0 ..	0 0
brown........	41 0 ..	0 0	39 10 ..	0 0
Foreign pale....	46 0 ..	0 0	43 10 ..	0 0
brown........	42 0 ..	0 0	40 10 ..	0 0
Cottonseed	27 10 ..	33 10	33 0 ..	39 5
Lard....................	70 0 ..	0 0	76 0 ..	0 0
Tallow	35 0 ..	0 0	35 0 ..	0 0
Turpentine, American, cks.	30 6 ..	0 0	26 6 ..	26 9
Petroleum, Crude	0 0 ..	0 0	14 0 .	0 0
	s. d.	s. d.	s. d.	s. d.
refined, per gall.	1 5¾ ..	1 6	1 6¾ ..	0 0
Spirit ,,	1 0 ..	1 1	0 9 ..	0 9½

SEEDS.

	1870.		1869.	
	s. d.	s. d.	s. d.	s. d.
Canary ....per qr.	48 0 ..	60 0	62 0 ..	72 0
Caraway, English per cwt.	40 0 ..	45 0	48 0 ..	52 0
German, &c.....	25 0 ..	34 0	28 0 ..	43 0
Coriander	0 0 ..	0 0	20 0 ..	21 0
Hemp ....per qr.	44 0 ..	48 0	42 0 ..	44 0
Linseed, English per qr...	0 0 ..	0 0	0 0 ..	0 0
Black Sea & Azof	57 0 ..	0 0	57 6 ..	57 9
Calcutta ,,	62 0 ..	62 6	62 6 ..	0 0
Bombay ,,	63 0 ..	0 0	63 6 ..	0 0
St. Petrsbrg. ,,	54 0 ..	55 0	54 0 ..	57 6
Mustard, brown..per bshl.	0 0 ..	0 0	15 0 ..	17 0
white.. ,,	0 0 ..	0 0	11 0 ..	15 0
Poppy, East India per qr.	52 0 ..	0 0	56 9 ..	57 0

SPICES.

	1870.		1869.	
	s. d.	s. d.	s. d.	s. d.
Cassia Lignea ....per cwt.	93 0 ..	112 0	123 0 ..	136 0
Vera .... ,,	47 0 ..	32 0	45 0 ..	85 6
Buds .... ,,	155 0 ..	175 0	150 0 ..	180 0
Cinnamon, Ceylon,				
1st quality ....per lb.	1 8 ..	3 3	2 5 ..	3 9
2nd do. ...... ,,	1 3 ..	3 2	1 10 ..	3 7
3rd do. ...... ,,	1 1 ..	2 11	1 7 ..	3 5
Tellicherry ...... ,,	0 0 ..	0 0	0 0 ..	0 0
Cloves, Penang.... ,,	0 11¼ ..	1 1½	0 10½ ..	1 0
Amboyna........ ,,	0 4½ ..	0 5¾	6 4½ ..	0 5¼
Zanzibar .... ,,	0 3 ..	0 3⅓	0 2⅞ ..	0 3
Ginger, Jam., fine per cwt.	80 0 ..	0 0	110 0 ..	200 0
Ord. to good .. ,,	30 0 ..	77 0	37 0 ..	100 0
African.......... ,,	27 0 ..	29 6	24 6 ..	25 0
Bengal .... ,,	26 6 ..	26 6	26 0 ..	27 0
Malabar .... ,,	23 6 ..	27 0	0 0 ..	0 0
Cochin .... ,,	30 0 ..	110 0	38 0 ..	120 0
Pepper, Blk. Malabar, per lb.	0 5¼ ..	0 6	0 5 ..	0 5¾
White, Tellicherry ,,	0 9 ..	1 5	0 9 ..	1 5
Cayenne .... ,,	0 8 ..	1 1½	0 7 ..	0 11¾
Mace, 1st quality ..per lb.	3 1 ..	3 9	3 6 ..	4 2
2nd and inferior.. ,,	2 5 ..	3 0	2 6 ..	2 4
Nutmegs, 78 to 60 to lb.	2 8 ..	4 4	2 10 ..	4 4
00 to 30 ,,	2 3 ..	2 7	2 6 ..	2 9
132 to 95 ,,	1¾ 7 ..	2 2	1 8 ..	2 2

VARIOUS PRODUCTS.

	1870.		1869.	
COCHINEAL—				
Honduras, black ..per lb.	2 6 ..	3 9	2 10 ..	4
,, silver .. ,,	2 5 ..	2 10	2 7 ..	3 1
,, pasty .. ,,	1 9 ..	2 2	2 4 ..	2 8
Mexican, black .... ,,	2 5 ..	2 9	3 0 ..	3 2
,, silver .... ,,	2 3 ..	0 0	2 7 ..	2 9
Teneriffe, black....	2 6 ..	4 0	2 10 ..	4 10
,, silver.... ,,	2 5 ..	2 7	2 8 ..	2 10
PUMICE STONE ..per ton	120 0 ..	160 0	120 0 ..	160 0
SOAP, Castile ....per cwt.	35 0 ..	0 0	35 0 ..	0 0
SPONGE, Turk. fin pkd pr lb.	12 0 ..	16 0	12 0 ..	16 0
Fair to good .. ,,	4 0 ..	11 0	4 0 .,	11 0
Ordinary...... ,,	1 0 ..	3 6	1 0 ..	3 6
Bahama............ ,,	0 6 ..	2 6	0 6 ..	2 6
TERRA JAPONICA—				
Gambier .. per cwt.	16 0 ..	16 3	17 0 ..	17 6
Free cubes ,,	17 0 ..	19 6	19 6 ..	22 0
Cutch ..... ,,	13 0 ..	20 6	26 0 ..	27 0
WOOD, Dye, Bar ..per ton	£3 15 ..	£4 0	£4 0 ..	£4 10
Brazil .... ,,	0 0 ..	0 0	6 0 ..	0 0
Braziletto .... ,,	0 0 ..	0 0	0 0 ..	0 0
Cam .... ,,	17 0 ..	24 0	26 0 ..	32 0
Fustic, Cuba...... ,,	7 10 ..	3 10	7 15 ..	8 10
Jamaica .... ,,	4 0 ..	5 10	4 12/6..	5 15
Savanilla........ ,,	0 0 ..	0 0	0 0 ..	0 0
Logwood, Campeachy ,,	9 10 ..	10 0	10 0 ..	10 10
Honduras ...... ,,	5 10 ..	6 10	6 10 ..	0 0
St. Domingo .... ,,	5 10 ..	6 10	6 0 ..	6 10
Jamaica .... ,,	3 7/6 ..	3 15	6 2/6..	6 5
Lima, first pile.... ,,	10 0 ..	11 0	14 10 ..	15 0
Red Sanders...... ,,	6 7/6 ..	6 10	8 0 ..	0 0
Sapan, Bimas, &c. ,,	7 0 ..	9 0	7 0 ..	9 10